Analysing sector performance and company-specific performance for listed real estate

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Analysing sector performance and company-specific performance for listed real estate

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EXECUTIVE SUMMARY

This research investigates how company-specific attributes including market capitalisation, institutional structure and investment focus impact upon key performance indicators. The study centres on six key listed European real estate markets namely France, Germany, Netherlands, Sweden, Switzerland and the United Kingdom. EPRA data provision afforded exploration of key performance indictors across the six markets for the period 2007-2017. Bloomberg data served to compliment the EPRA data provision affording integration of company level attributes with key market performance indicators. The results presented are based on 113 listed property companies all of whom were constituents of the EPRA indices over the defined time series.

In order to achieve the necessary consistency of interpretation and granularity depicting company-level performance attributes, a series of customised performance indices were constructed. This delineated analysis details a number of pertinent findings:

- In terms of explanatory power, company level attributes collectively account for more variation of risk-adjusted return than sector level attributes over the investigation period. More specifically, return on equity has been one of the most important attributes in explaining the performance of listed real estate. This may have implications for real estate companies aiming to raise capital internally for growth as higher return on equity in general signals reduced cost of capital.

- The analysis also demonstrates that the impact of company specific attributes on performance varies significantly from country to country. This in some respects can be attributed to the contrasting cyclical property market trends pertinent within the six markets across the 10year time series 2007-2017. This in turn served to showcase the importance of company level attributes in optimising market upcycle opportunities and bolstering resilience in downcycles.

- In terms of structural composition, it is noteworthy that REITs outperformed non-REITs over the investigation period 2007-2017 on a risk-adjusted basis. The increased maturity, improved depth in the market allied with niche market entrants have all been factors in contributing to the out-performance of REITs.

- Finally, the research served to showcase the value adding benefits realised by sector specialist funds across the market cycle. Using Herfindahl Index (H.I) time series constructs the research results suggest that sectoral diversification is better attained by investing across sector-specialist companies rather than seeking diversification at the individual company level.

A more thorough understanding of sector-wide and company-specific attributes impacting listed real estate performance based on robust statistical analysis is valuable to investment professionals in terms of diversifying investment portfolios and mitigating industry/company-specific risks. Second, given that the scope of this research covers six major public real estate markets in Europe, the findings should be of practical use to multinationals specialising in international real estate trading in designing their business plans in general, and formulating cross-country investment strategies in particular. Last but not least, a more refined conceptualisation of corporate level performance drivers should complement existing professional practices in relation to business/company appraisal.

1.0 INTRODUCTION

Increasingly, listed real estate has become an indispensable segment of the global investment universe. Recent years have witnessed a significant increase in the volume of capital flows into listed real estate markets by institutional investors from around the world seeking exposure to 'tangible' assets whilst simultaneously benefiting from the liquidity and regulated market structure. Given the rising demand for tangible investment by international investors (such as defined pension funds) and the lack of alternative asset classes with similar risk-return characteristics, the importance of the listed real estate sector within investor portfolios will continue to expand and evolve relative to investor need.

The European listed real estate market has evolved markedly over the course of the last decade. Traditional sectors including office, retail and residential continue to dominate in terms of overall market composition; however, niche industries such as self-storage and health care are gaining traction with growing investor appetite apparent in recent years. Given the increased depth and growing diversity within the European listed real estate sector, understanding the key drivers of performance at market, sectoral and company level has assumed increased importance and is of practical benefit for informing portfolio allocation strategies. Specifically, this research will address the following questions:

(1) How have European listed real estate companies/markets performed in terms of risk-adjusted return?

(2) What are the key attributes affecting the performance of European listed real estate at (i) sector and (ii) company levels?

The research focuses on the historical performance of six major European markets, namely France, Germany, the Netherlands, Sweden, Switzerland and the U.K. The six markets were selected on the basis of market capitalisation, diversity, transparency and maturity. A series of statistical tests were undertaken using EPRA and Bloomberg data on the six countries, for the period 2007–2017. The analysis explores the relationship between listed real estate performance and a wide spectrum of attributes at both sector and company levels. In the study, ten real estate sectors were identified using EPRA categorisations. The company specific attributes comprised (a) market capitalisation, (b) loan-to-value, (c) dividend yield, (d) revenue growth, (e) return on equity, (f) corporate structure, (g) investment focus and (h) degree of business diversification. A comparison between REIT and non-REIT markets, together with an examination of listed real estate companies with different investment focus (rental versus non-rental) are documented to contextualise the analysis.

The remainder of the report is presented in a series of sections. Section 2.0 affords an overview of the European listed real estate investment market, describing the historical performance of various sectors and submarkets. Section 3.0 presents the research methodology whilst the empirical results and discussion are detailed in Section 4.0. Section 5.0 concludes the report, highlighting the key findings and the main learning outcomes of the research.

2.0 PERFORMANCE OF THE EUROPEAN LISTED REAL ESTATE MARKETS

The Developed Europe[1] listed real estate market capitalisation equates to over €212bn[2] and is an integral component of the global investment universe posting a ten-year annualised total return (2007-2017) of 3.53% (Exhibit 1). Exhibit 1 also highlights the historical trends and other performance characteristics of the six European listed real estate markets over the same time series. Sweden and Switzerland have led performance with 10-year annualised total returns of 12.08% and 11.25% respectively. Pertinently, Sweden has also outperformed the other five markets over the short (1 year) and medium-term (5-year) periods. Despite being the largest market in the sample, the U.K. posted a negative 10-year annualised total return (-1.31%). The German and French markets performed relative to the European average (excluding the U.K.) over the investigation period.

[1]Developed Europe" in this study is defined as a collection of European markets that are covered by FTSE EPRA/NAREIT Developed Europe Index Series.
[2]As at end of October 2017.

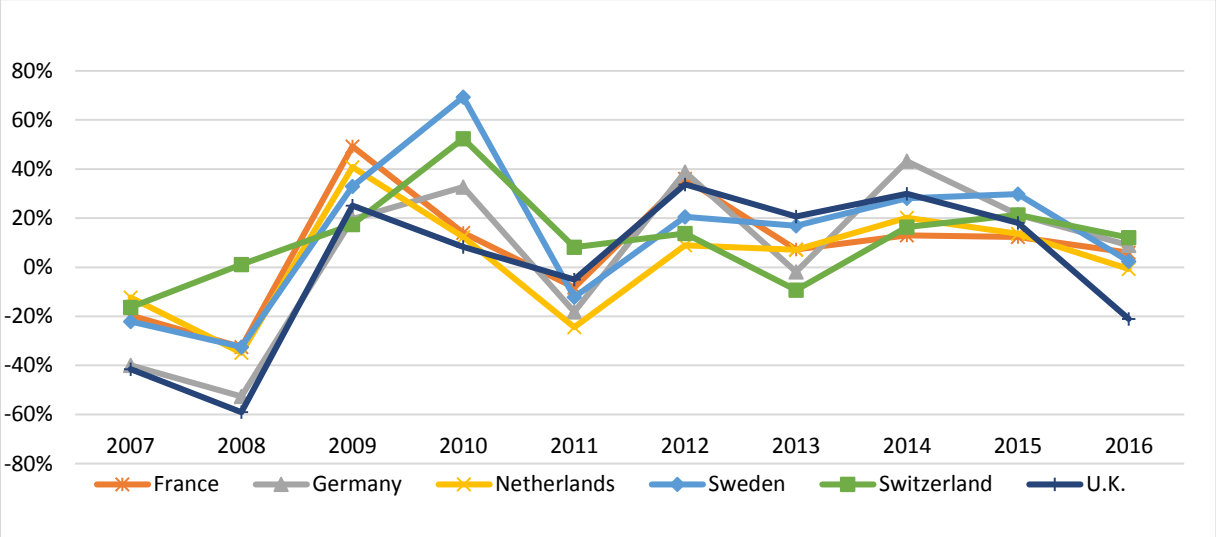
Exhibit 1: Descriptive statistics of the European listed real estate markets

Country/ Region	M. Cap (€M)	Total. Rtn (%) - 10 Yrs	Total. Rtn (%) – 5 Yrs	Total. Rtn (%) – 1Yr	10 Yrs Vlty (%)	36M Vlty (%)
Developed Europe	212,109	3.53	11.98	12.57	16.99	12.35
Developed Europe Ex. UK	151,725	5.89	13.05	12.68	16.91	12.79
France	20,615	6.92	9.49	6.78	19.01	15.34
Germany	48,444	4.33	17.96	19.43	23.63	15.63
Netherlands	25,774	1.35	7.83	3.94	18.21	15.35
Sweden	18,181	12.08	18.10	15.44	22.86	14.30
Switzerland	5,080	11.25	7.09	0.67	14.35	14.27
U.K.	60,383	-1.31	8.78	12.52	21.56	16.92

Source: EPRA (2017)

Exhibit 2 depicts the total return performance of the six markets over time. It is noteworthy that total returns in the Switzerland market depict a low level of correlation with the other European markets - due in part to its unique financial openness and status as a country outside of the European Union. All other European listed real estate markets are strongly correlated with coefficients in excess of 80%[3]. Most noticeably, the performance of the U.K. market is substantially correlated (90.17%) with that of the Developed Europe index (excluding the UK). Consequently, investors may not be able to gain significant diversification benefits anticipated by expanding their investment portfolios at a Pan-European level.

Exhibit 2: Historical total returns of the six selected European listed real estate markets



Source: EPRA (2017) and authors' compilation

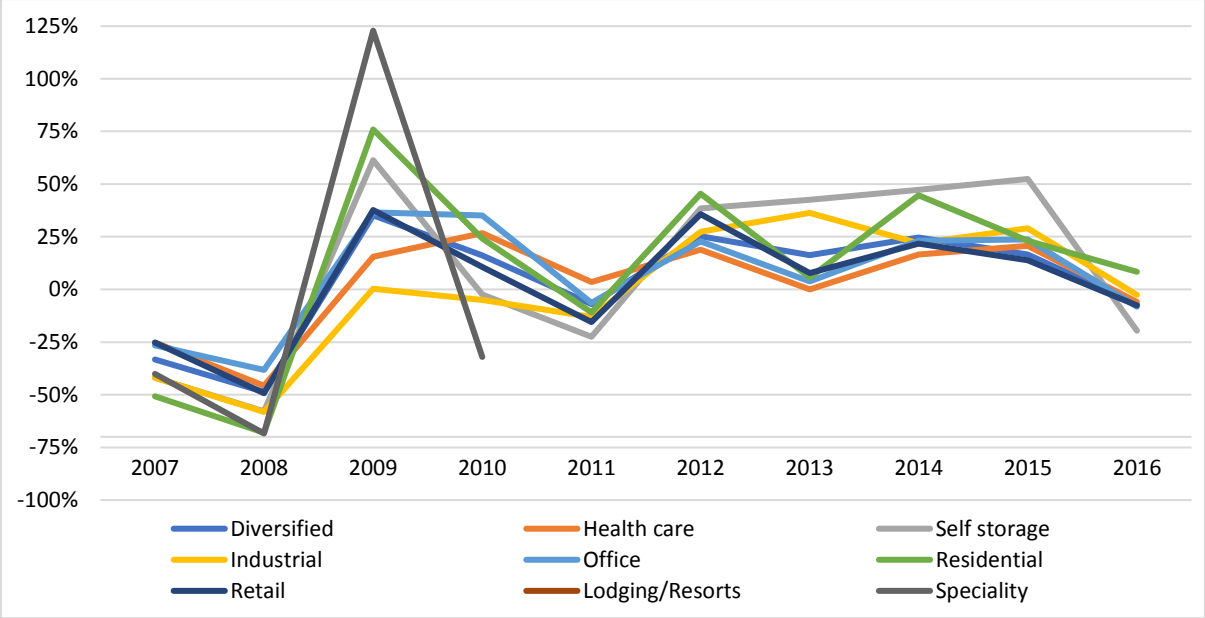
[3]See Appendix i

2.1 Key Investment Trends

Utilising the FTSE EPRA/NAREIT Developed Europe Sector Index Series,[4] the research initially categorised the constituent companies[5] by country and sub-sector focus[6]. With regards to market capitalisation across the sub-sectors, companies with a Diversified investment focus topped the list in terms of market capitalisation, accounting for circa 32.35% (or €68.62bn) of the entire Developed Europe listed real estate universe. Residential and Retail specialist companies comprised 24.14% (or €51.20bn) and 22.27% (or €47.23bn) respectively. Other traditional real estate sectors such as Office and Industrial occupied a relatively less prominent position, comprising 11.26% (or €23.88bn) and 5.42% (or €11.49bn) of the market. The 'niche' sectors, though growing in popularity in recent years, still account for a small portion of the market with Healthcare, Self-storage and Lodging/resorts collectively equating to circa 2.9% of the overall market value.

As evidenced in Exhibit 3, the historical performance of the sectors has followed broadly similar trends with varying magnitudes of volatility over the analysis period[7]. This is confirmed within the correlation analysis which clearly illustrates sectoral total returns to be highly aligned and associated. Most evidently, Diversified, Residential and Retail are highly correlated with coefficients in excess of 96%.

Exhibit 3: Historical sector-level annual total returns of the European market[8]



Source: Authors' compilation based on FTSE EPRA/NAREIT Developed Europe Sector Index Series.

When examining the performance of different corporate structures on the performance of listed real estate, as at the end of Q3 2017, REITs in Developed Europe collectively account for €122bn of the listed real estate market while non-REITs account for circa €90bn. In terms of performance, non-REITs, on average, have outperformed REITs over a 3-year time horizon by a sizable margin (16.42% vs 4.25%), despite the former having a lower level of volatility. At the country level, the German non-REIT sector has seen the most notable growth among the sample countries over the course of the past five years with a total return of 18.41%. In contrast, the German REIT sector displays significantly lower total returns of 9.97% over the same five-year investment horizon. A similar, albeit inverse

[4] Note that FTSE EPRA/NAREIT Developed Europe Sector Index Series is a Europe-wide time series that tracks the performance of both sample and non-sample companies listed on stock exchanges in Europe.
[5] See Appendix (ii)
[6] namely (i) diversified, (ii) residential, (iii) retail, (iv) office, (v) industrial, (vi)industrial and office, (vii) healthcare, (viii) self-storage, (vi) lodging/resorts and (x)speciality. NB: companies were re-categorised during the investigation period.

[7] See Appendix (iii) for robustness check on sectors for further re-categorisation within the model testing and analysis.
[8] Time series on Industrial/office is omitted due to data unavailability. Data on the sector of speciality are not available. *Figures in brackets indicate the size of the sectors (%) relative to the entire market.

phenomenon, can be evidenced in the UK where the REIT sector has grown more rapidly than its non-REIT counterpart over the time horizons under investigation.

The differentiation between rental and non-rental business was deemed a key dimension of performance dynamics. As such, the research employed the FTSE EPRA/NAREIT Developed Investment Focus indices in order to designate the existing constituents into both Rental and Non-Rental indices[9,10]. Overall, the European rental market[11] is substantially larger than its non-rental counterpart by market capitalisation (€194bn vs €20bn). The non-rental sector has delivered an average total return of 30.49% over the five years to the end of October 2017, compared to 10.80% generated by its rental counterpart over the same time period. The analysis (Appendix iii) further indicates that the non-rental sector is characterised by greater volatility (40.20%) compared to the rental sector (11.90%) over a ten-year investment time horizon. This can be largely explained by the fact that non-Rental companies in the main have more significant exposure to development and refurbishment activities than their rental counterparts. Comparatively, the UK rental sector delivers slightly lower total returns over both the 5-year (8.46%) and 1-year time horizons (11.83%)[12].

3.0 METHODOLOGY

This section presents the methodology and data employed in the study. The main regression model that was developed to explain the performance of listed real estate companies is specified as follows:

$$R_i = c + \boldsymbol{t} + \boldsymbol{C_i} + \boldsymbol{S_i} + Cap_i + LTV_i + D_i + ROE_i + REV_i + REIT + I + r.f. + e \text{---}$$

where the i subscript denotes the cross-sectional dimension of the companies included in the sample. The dependent variable, R, is the risk adjusted return (Sharpe ratio[13], please refer to "The Dependent Variable" below for further details) of the company. c is a constant. **t** is a set of yearly time dummy variables with year 2007 being the base group. Since the study covers the period of 2007-2017, ten dummy variables are used. $\boldsymbol{C_i}$ is a set of country dummy variables with the U.K. being the base group. In total, five country dummies are included to account for the six sample countries. $\boldsymbol{S_i}$ is a set of sector dummy variables. We use the sector classification system for listed real estate companies designed by EPRA (2007-2017) in order to assign sector dummies to the observations. Ten sectors – namely (i) diversified, (ii) residential, (iii) retail, (iv) industrial, (v) office, (vi) industrial/office, (vii) lodging/resorts, (viii) health care, (ix) self-storage and (x) speciality – are classified with diversified being the base group[14].

To empirically separate the effects of company-specific characteristics from those of $\boldsymbol{C_i}$ and $\boldsymbol{S_i}$, we incorporate a number of company-level attributes in the model[15]: (i) Cap_i is the market capitalisation of company i, which indicates the size of the company as defined as the sum of its equity and debt. Consistent with the approach adopted in previous studies, logarithmic transformation is applied to this variable; (ii) LTV_i refers to the loan-to-value ratio of company i, which describes its capital structure

[9] According to EPRA's definition, a company is included in the Rental index if its rental revenue from investment properties is greater than or equal to 70% of total revenue. On the other hand, a company is included in the non-rental index if its rental revenue from investment properties is less than 70% of total revenue.
[10] Figures on the U.K. market, of which both rental and non-rental time indices are available from EPRA, are presented as well for comparison purposes.
[11] Rental and Non-Rental universe premised on the 'entire' European listed real estate market.
[12] See Appendix (v) for descriptive statistics
[13] Sharpe ratio and risk-adjusted return are used interchangeable throughout the report.
[14] It must be emphasised that some companies in our sample have switched from one sector to another during the sample period, resulting in changes of their sector dummies.
[15] Whilst we recognise that there are certainly other company-specific attributes such as management expertise, organisation structure and company's age that also play a significant a role in determining a company's performance, they are excluded from our models due to issues over data availability and consistency. In addition, incorporating too many regressors to the regression models would lead to multicollinearity problems. Based on an extensive literature review and within the confines of our study, we surmise that our models have sufficiently taken into account the most important and relevant attributes in relation to a company's capital composition, business strategy, corporate structure and other firm-level financial characteristics. Indeed, the number of company-specific variables included in our models is comparable to other studies' of similar themes such as Ooi and Liow (2004) and Giacomini et al. (2015).

equal to total amount of debt divided by total value; (iii) D_i is the dividend yield, which is equal to sum of gross dividend divided by current stock price; (iv) ROE_i is return on equity of company i, which indicates the company's profitability by revealing how much profit it generates with the capital shareholders have invested; (v) REV_i denotes growth in revenue over the prior twelve months (a positive REV_i suggests an increased level of cash inflows to the company); (vi) REIT is a binary variable, which is equal to one if the company is a REIT, zero otherwise; (vii)[16] I represents the investment focus of the company, which is equal to one if the company's rental revenue from investment properties is greater than or equal to 70% of total revenue, zero otherwise.; *r.f.* refers to the *risk free* rate, which captures the risk-free opportunity cost of capital. In our study, we employ the yield of ten-year government bond[17] of the country in which the company is listed as the appropriate risk free rate. The inclusion of this variable is to control for the impact of interest rate movements over the sample period; lastly, e is an error term. A full technical discussion of the variables, their definitions and abbreviations can be found below.

Summary of key variables

Variables	Abbreviation	Definition of Variables
Risk adjusted return	R	Annualised total excess return of company divided by standard deviation of returns over a twelve-month period.
Raw return	R'	Annualised total return of company.
Market capitalisation	Cap	Sum of total equity and total debt.
Loan to value	LTV	Total amount of debt divided by the total value of company.
Risk free rate	r.f.	The rate of return of a ten-year government bond for the subject time period.
Dividend yield	D	Sum of gross dividend per share amounts that have gone ex-dividend over the prior 12 months, dividend by the current stock price. All cash dividend types are included in the yield calculation.
Return on equity	ROE	Net income available for common shareholders divided by average total common equity.
Growth in revenue	REV	Percentage change in revenue generated from real estate operating activities over the prior twelve months. The revenue includes rental income, real estate sales (for real estate operating companies), management and advisory fees, mortgage and note income and other operating income.
Return volatility	V	Standard deviation of monthly excess return over the prior twelve months.
REIT	REIT	Equal to one if the company is classified as REIT by EPRA; zero otherwise.
Investment focus	I	Equal to one if the company's rental revenue from investment properties is greater than or equal to 70% of total revenue; zero otherwise.

[16] One of the main objectives of this research is to explore the effects of different corporate structures on the performance of listed real estate. Therefore, the analysis divided the sample companies into two main groups – REITs and non-REITs. Generally speaking, REITs and non-REITs in Europe can be differentiated based on the institutional constraints under which they operate, resulting in very dissimilar profiles of risk, investment strategies and exposure to business opportunities. In particular, they are characterised by different tax regimes and laws/regulations governing areas such as dividend distribution, asset composition and gearing.

[17] We do not use a one-year government bond yield (or yields of government bonds with term to maturity shorter than ten years) as the risk free rate for the following reasons: First, a ten-year government bond matches the investment horizon of listed real estate companies better than the one-year counterpart, since a real estate equity can be viewed as a long term claim on the company's assets. Indeed, this view is empirically confirmed in Sivitanides et al. (2001). Second, after the GFC, financial analysts have relied more on long-term government bond yields than short-term yields to measure risk free rates since short-term government bonds have become an increasingly important tool of monetary policy used by a country's central bank to regulate economic activity. Therefore, short-term government bond yields may be very much affected by short-run economic considerations, rendering their use in determining allowed rates over a longer regulatory time horizon questionable (Villadsen et al., 2017).

The Dependent Variable

The Sharpe ratio is used to measure the risk-adjusted returns of real estate companies in this study. It is defined as the mean of excess returns divided by the standard deviation of returns of a given investment over a given time period. Mathematically, it is expressed as follows:

$$S_{i,t} = \frac{\bar{R}_{i,t} - r.f._{.t}}{\sigma_{i,t}}$$

where $S_{i,t}$ is the Sharpe ratio of company i at year t, $\bar{R}_{i,t}$ is the mean rate of return of company i during year t. $r.f._{.t}$ is the risk free rate of return at year t. $\sigma_{i,t}$ is the standard deviation of the rate of return of company i during year t, which indicates the degree of return volatility during the period. Monthly closing year-on-year total returns of the individual company are utilised to compute the annual mean returns as well as return volatility of the individual companies. $S_{i,t}$, therefore measures the amount of mean excess return generated per unit of volatility. In our study, we compute Sharpe ratios for each sample company on a quarterly basis for the period Q1 2007-Q3 2017. The same time basis is consistently applied to construct time series for other variables used in the regression models.

Data

To empirically test the regression models in the study (for each model specification - sample period, sample sectors and sample countries see Technical Annex), we utilise data provided by EPRA, supplemented where necessary, with financial and company level data obtained from Bloomberg. For interpretation consistency, all financial data are measured in Euro's and on a quarterly basis. Our dataset comprises 6 countries, 10 real estate sectors, and 113 listed real estate companies tracked by FTSE EPRA/NAREIT Developed Europe Index Series during the period of Q1 2007 – Q3 2017.

Robustness models and sector level models

To check the robustness of our regression models and variable selection, we perform a number of robustness tests for each methodological step – where appropriate. Due to sample size limitations (for econometric modelling purposes) a re-categorisation of the RE sectors was necessary. In this regard, the research re-categorises the above mentioned ten real estate sectors into five main groups, namely (1) diversified, (2) residential, (3) retail, (4) industrial/office (comprising the original sector classifications industrial, office and industrial/office) and (5) speciality (comprising the original sector classifications lodging/resorts, health care, self-storage and speciality). Thus, a new model (Model 2) is developed by redefining the original sector dummies taking the five-sector approach. For the sake of interpretation, the original sector classification method is hereinafter referred to as the "10-sector method" and the new one as the "five-sector method".

Models 3 and 4 [Raw return models] use nominal return as the dependent variable. In addition, all raw return models developed incorporate an additional explanatory variable, namely return volatility, which is defined as the standard deviation of raw return over the prior twelve-month period. We surmise, as previous studies suggest, that return volatility tends to increase raw return as investors expect higher returns for riskier investments. Moreover, for testing and robustness diagnostics the research utilises the realised Dividend yield (D_i) (Original models 1-4). We modify Models 1–4 by substituting realised dividend yield with indicated dividend yield (Models 5–8), to test for the robustness with respect to D_i. The results show consistency with those of Models 1 – 4 in terms of coefficient sign, magnitude and statistical significance, confirming the realised to be appropriate and justified.[18]

To explore the time dimension of our models, we create splines and run our analysis across two sub-periods. Period one comprises Q1 2007 to Q4 2011, which is characterised by extreme market volatility due to the GFC; period two comprises Q1 2012 to Q3 2017, which reflects the relatively gradual

[18]Following the approach of Ooi and Liow (2004), who studied the effects of various company-specific attributes on risk-adjusted performance of listed real estate in Asia, we use realised dividend yield as one of the key independent variables in the regression models in a contemporaneous setting. We have also checked the robustness of the results on D by substituting it with 12-month indicated dividend yield, whose data are also extracted from Bloomberg. It is defined as "the most recently announced dividend amount, annualised based on the dividend frequency and divided by the current market price". It is found that there is no material difference between the results obtained using the two types of dividend yield. Correlation tests further reveal that they are highly correlated with a correlation coefficient of 0.87.

recovery stages of the markets post GFC. Models 9–12 study the first sub-period whereas Models 13–16 examine the second sub-period. In addition, to compare and contrast the listed real estate markets of different countries/region in Europe, we develop (1) Models 17–28 for the UK market, and (2) Models 29–40 for all sample continental European markets[19] (i.e. France, Germany, the Netherlands, Sweden and Switzerland). They vary in terms of the combination of the above mentioned model specifications in relation to the choices of dependent variable, sector classification and study period. Since Models 1 to 40 account for all defined Real Estate sectors in the sample in the regression equation, they are referred to as "the aggregate models" throughout this report (See Technical Annex in Appendices for summary of model specification, sample period(s), sample sectors and sample countries for Models 1 – 40).

The approach further performs sector-level tests by estimating regression models separately for each defined real estate sector (Models 41 – 49). In total, nine real estate sectors are investigated, namely (i) diversified, (ii) residential, (iii) industrial/office, (iv) retail, (v) speciality, (vi) REIT, (vii) non-REIT, (viii) rental and (ix) non-rental. The first five groups are mutually exclusive, so are REIT and non-REIT, and rental and non-rental. Due to data limitations, the five-sector classification method is adopted in assigning sector dummies for all sector level models. For the same reasons, only three time windows are defined to create time dummies – (a) 2007-2009, (b) 2010 – 2013 and (c) 2014-2017 – with (a) being the base group. Models 50 – 58 are developed to check the robustness of Models 41 – 49 by using raw return as the dependent variable. We further subject the tests to "sub-period analysis": Models 59 – 67 are designed to study the sub-period of 2007 to 2011 whilst Models 68 – 76 are developed to examine the sub-period of 2012-2017. Models 77 – 85 employ indicated dividend yields to further test the consistency of results on the dividend yield variable (a summary on model specification, sample period(s), sample sectors and sample countries for Models 41 – 85 is detailed in the Technical Annex within the Appendices).

Diversification models

One of the objectives of this study is to explore whether the degree of business diversification of a listed real estate company is value-enhancing. To achieve this, we construct a Herfindahl Index *(H.I.)* for each company-year observation over the period of 2012 – 2016 using annual company-level portfolio data provided by EPRA. Mathematically, H.I. is expressed as follows:

$$H.I._{\cdot i,t} = \sum_{j=1}^{n} INV_{j,t}^{2} / (\sum_{j=1}^{n} INV_{j,t})^{2}$$

with *i* and *t* denoting the cross-sectional and time dimensions of the observations respectively. $INV_{j,t}$ represents the proportion of investment portfolio of company *i* allocated to sector *j* at time *t*. H.I., therefore, it indicates the extent to which a firm's portfolio is concentrated within its industry/sector segments. It takes the value of one if the firm focuses on only one particular sector and decreases as the degree of diversification increases. Incorporation of the H.I. into the regression models to examine its effect on risk-adjusted return can be observed in Model 86. To increase the robustness of our analysis, we substituted H.I. with a dummy variable, S.S. – which is equal to one if *i* is a sector-specific company (i.e. H.I.=1), zero otherwise (Model 87). Lastly, we conduct two additional robustness tests to validate the models with raw return as the dependent variable (Models 88 – 89 – see Technical Annex for a summary on the regression specifications of Models 86 – 89).

Tests on the explanatory powers of attributes

Following the approach adopted by Connor (1995) and Chaumeton et al. (1996), we analyse the explanatory power (or partial R^2) of the key identified attributes/ sets of attributes of our regression models in order to compare their significance to risk-adjusted performance of listed real estate. The explanatory power of an attribute can be examined in two ways: (i) By measuring the coefficient of determination of the regression model when the attribute under investigation is the only regressor in the model (Method A), and (ii) by measuring the marginal increase in the coefficient of determination of the model (i.e. R^2) after adding the attribute to a set of existing explanatory variables (Method B). The

[19]Due to data limitations, the five continental European countries have to be studied as one group to ensure a high level inference power of our regression models.

tests are conducted across Models 1, 9, 13, 17, 21, 25, 29, 33 and 37 in order to determine the influence of different attributes/sets of attributes on risk-adjusted return for different sets of sample countries and time periods.

4.0 EMPIRICAL RESULTS AND DISCUSSION

4.1 Aggregate Level Analysis

The findings emanating from the study analyse a suite of regression models[20] premised on the EPRA indices (constituent companies) supplemented with the company specific performance characteristics extracted from Bloomberg. The models developed and specified offer a systematic approach for examining the various country, sectoral[21], and company specific attributes across a range of time periods (each series of models can be observed in the Technical Annex provided). For consistency purposes, the risk-adjusted return is analysed for model interpretation and analysis[22]. Notwithstanding this, where applicable, any discrepancies between the risk-adjusted and raw return models are highlighted and discussed for completeness of results.

At the aggregate level, over the entirety of the time series (Models 1-2 – Exhibit 7), the findings reveal Switzerland to be the best performing country, followed by Sweden, Germany, the Netherlands and the U.K. ($p<.01$) - a finding also evident when examined on a raw return basis (Models 3-4). Interestingly, Healthcare is the best performing real estate sector over the investigation period, followed by Industrial ($p<.01$). The results for other sectors are less statistically significant with Industrial and combined Industrial/Office (5 sector model) tending to outperform the market average. The Retail sector performs poorly in comparison to the other sectors, arguably a consequence of the transformation within the sector – the shift to online retailing and wider exogenous shocks from economic uncertainty. When analysed factoring in the reclassification of the sectors, the Speciality sector outperforms all others, with Retail continuing to exhibit underperformance with risk-adjusted returns below that of the base sector (Diversified).

Exhibit 7: Regression Results All countries at the aggregate level, 2007-2017(NB: full model in Appendices)

	Dependent Variable	**Risk-adjusted Return (R)**		**Raw Return (R')**	
	Independent Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
	C	-2.381206 (0.0155) **	-2.167843 (0.0259) **	-0.522160 (0.0014) ***	-0.442909 (0.0060) ***
Country Variables (Base UK)	**France**	-0.140748 (0.3543)	-0.240091 (0.1096)	0.022477 (0.3723)	0.009748 (0.6963)
	Germany	0.881473 (0.0000) ***	0.803443 (0.0000) ***	0.095996 (0.0000) ***	0.095186 (0.0000) ***
	The Netherlands	0.253001 (0.0870) *	0.158126 (0.2801)	0.087810 (0.0003) ***	0.074782 (0.0020) ***
	Sweden	0.948997 (0.0000) ***	0.884043 (0.0000) ***	0.097515 (0.0002) ***	0.102416 (0.0001) ***
	Switzerland	1.396616 (0.0000) ***	1.314598 (0.0000) ***	0.115291 (0.0020) ***	0.113916 (0.0017) ***
C	**Market Capitalisation**	0.104514	0.063260	0.021800	0.011719

[20] Eighty regression models were specified for the analysis.
[21] As discussed in the methodology, to comply with statistical assumptions the sectors were reclassified (grouped).
[22] The risk-adjusted return whilst used as the benchmark was tested initially with the raw return within the regression Models 1-8 as a robustness step. The findings show very similar results in terms of coefficient magnitude, direction and statistical significance. The only difference between the model architecture is the inclusion of the return volatility parameter in the raw return models. This is also the same for use of the indicated dividend yield.

	(Cap)		(0.2938)	(0.5186)	(0.1860)	(0.4694)
	Loan to Value (L)		-1.429240 (0.0000) ***	-1.211183 (0.0001) ***	-0.009848 (0.8533)	-0.015679 (0.7621)
	Dividend Yield (D)		-0.071747 (0.0000) ***	-0.065916 (0.0000) ***	-0.021295 (0.0000) ***	-0.020164 (0.0000) ***
	Return On Equity (ROE)		0.042413 (0.0000) ***	0.043140 (0.0000) ***	0.003544 (0.0000) ***	0.003743 (0.0000) ***
	Return Volatility (V)		N.A.	N.A.	0.494975 (0.0000) ***	0.436210 (0.0000) ***
	Growth in Revenue (REV)		0.064805 (0.2566)	0.076782 (0.1788)	0.022176 (0.0189) **	0.020703 (0.0284) **
	REIT (REIT)		0.298739 (0.0107) **	0.378545 (0.0007) ***	0.044527 (0.0219) **	0.062089 (0.0006) ***
	Investment Focus (I)		-0.023849 (0.8404)	0.000507 (0.9965)	-0.017452 (0.3729)	-0.020721 (0.2827)
Sector Variables (Base = Diversified)	**Residential**		-0.159578 (0.2775)	-0.120126 (0.4126)	-0.035161 (0.1488)	-0.022383 (0.3560)
	Retail		-0.315058 (0.0036) ***	-0.299048 (0.0058) ***	-0.051266 (0.0041) ***	-0.048404 (0.0069) ***
	Industrial/	**Industrial**	0.550200 (0.0014) ***	0.169453 (0.0962) *	0.027061 (0.3406)	-0.001591 (0.9249)
		Office	0.034288 (0.7679)		-0.011459 (0.5512)	
		Industrial/Office	0.593242 (0.2835)		0.125789 (0.1688)	
	Speciality	**Lodging/Resorts**	-0.336248 (0.7236)	0.423914 (0.0074) ***	-0.059489 (0.7049)	0.009361 (0.7208)
		Health care	0.984589 (0.0000) ***		0.071229 (0.0537) *	
		Self-storage	0.053821 (0.8254)		0.048905 (0.2257)	
		Speciality	0.188440 (0.5820)		-0.196913 (0.0009) ***	
	Risk free (r.f.)		53.34203 (0.0000) ***	53.64914 (0.0000) ***	4.962113 (0.0008) ***	5.098533 (0.0006)***
	Included Obs.		1616	1616	1616	1616
	R^2		0.643524	0.639435	0.466448	0.459885
	Adjusted R^2		0.636318	0.633304	0.455318	0.450355
	Prob (F Stat)		0.0000	0.0000	0.000000	0.000000

Note: p-values are in brackets; "* indicates significance at the 10% level; "**"indicates significance at the 5% level; "***" indicates significance at the 1% level. Time dummies removed due to space limitations and available in the Appendices.

Examination of the company-specific characteristics over the entire period shows a number of noteworthy findings. With regards to the Loan-to-value parameter (L), it appears to have had a dampening effect on the risk-adjusted returns (p<.01). This is also similar for the Dividend Yield (D)[23] which marginally depresses risk-adjusted return and raw return. Conversely, both Return on Equity (ROE) and Growth in Revenue (REV) enhances risk-adjusted return and raw return (albeit risk adjusted return is not statistically significant for REV). Across all findings, Market Capitalisation (Cap) and Investment Focus (I) do not have any statistically significant relationships with the performance variables at any conventional statistical levels. One explanation for this is that constituents with larger market Caps have more concentrated exposures to 'traditional' real estate sub-sectors which have performed less favourably than many of the niche sub-sectors across the study period. Further to this, larger constituent companies also exhibit, on average, higher Loan-to-Value ratios. It is a common misconception that greater leverage generates higher returns, however, in a downturn companies with higher leverage generally underperform.

Pertinently, in times of volatility and high risk, the nature of REITs (for example) may be hampering the return as it would be preferable for companies to retain dividend particularly in uncertain market conditions. The Dividend Yield however can be misleading as some companies pay out yields too aggressively and fail to reinvest profit to sustain operations through market turbulence. Moreover, as discussed by George and Hwang (2009) for equity returns, endogenous leverage choice may imply a negative and significant relationship between debt (or leverage or distress risk) and expected returns. Pertinently, the corporate structure appears to have played a key role in terms of performance. With regards to raw return performance (Models 3 and 4), Return Volatility (V) appears to have a positive impact (consistent with financial theories: riskier investments command higher expected return).[24]

The Return on Equity also displays a positive effect (p<.001) suggesting that efficient invested funds (management) generates return. Higher ROE also implies that the company is able to raise capital for growth more easily (i.e. it is more capable of generating cash internally) and hence it explains the positive impact on risk adjusted return. This is in line with theoretical propositions[25] in that expected Return on Equity should increase with the amount of debt in a firm's capital structure. Nonetheless as highlighted by Rappaport (1986) it must be caveated that Return on Equity (asset turnover) is sensitive to inflation in that it may increase even when assets do not produce better returns - illustrating that in an environment where earnings decrease, ROE can increase through heightened levels of asset turnover and gearing leading to misled 'better performance' (Black et al. 2001) - ROE can be increased by increasing debt, even if the company is destroying value.

4.2 Market Cycle (Time) Regimes on Performance

As evidenced in the appendices, spline (sub-period) analysis, based on differing points in the market cycle, has been undertaken for the aggregate level. Models 9-12 (see Appendix C) examine the period 2007-2011, whilst Models 13-16 (see Appendix D) investigate the period 2012-2017. The former is a period characterised by extreme market volatility caused by the GFC. In contrast, the latter is a relatively more stable period of recovery. It was deemed that comparison between the two cycle periods offers insight into how the various sectors have responded to different market fundamentals and to garner further insights as to the sectoral and company specific performance measures in these distinct periods within the market cycle. The results highlight that Switzerland outperforms other European countries

[23]Models 5 – 8 (B) are run as a Robustness test using the indicated Dividend Yield instead of the realised Dividend Yield at the all country aggregate level (2007-2017). The results are consistent with those of Models 1-4 in terms of the magnitudes of the coefficients of the main variables' coefficients and statistical significance, signifying that Models 1-4 are statistically robust.

[24] To garner further insight into the underlying dynamics of the markets, we carry out additional analysis on the relationship between return volatility and realised dividend yield to test their joint effect on raw return performance across all property sectors and over the full sample period. This is achieved by adding an interaction regressor of the two variables to the models. Results reveal that the coefficient on the interaction regressor is positive and statistically significant at the 1% level, implying that return volatility indeed drives the level of dividend yield. In other words, in times of volatility, the listed real estate companies in our sample tend to adopt a more financially conservative policy by distributing a higher level of dividend to shareholders. The same results hold when indicated dividend yield is utilised. Given that the coefficient on dividend yield is negative, it appears that the effects of volatility and dividend yield are offsetting each other when the market is turbulent.

[25]Modigliani-Miller(1958)

over both sub-periods in terms of risk-adjusted return. Surprisingly, in terms of raw return, Switzerland is the worst performing country during the period of 2012-2017(Appendix D) - parallel with the other noticeable coefficient figures – arguably reflective of contrasting volatility profiles across the six markets. Sweden and Germany outperform the U.K. on a risk-adjusted basis over the two sub-periods. However, on a raw return basis, the U.K.'s market is better than all other sample European markets during the 2012-2017 (market recovery) period - as evidenced by the negative signs of their coefficients.

An interesting picture emerges when comparing the company level variables across the time periods. The negative effects of Loan-to-Value and Dividend Yield on risk adjusted return become more pronounced during 2012-2017 (Model 13 and 14), as the magnitude of the coefficients on L and D increase. On the other hand, the positive effect of Return on Equity on the risk adjusted return becomes greater as revealed by the larger magnitude of its coefficient. With regards to company structure, the coefficient on REIT displays a positive effect on performance in the latter period perhaps reflective of their increasing maturity and the improved regulatory regime. In terms of sector insights, Healthcare is the best performing sector ($p<.01$) across both sub-periods.

4.3 Geographic Performance Across Time Periods

The analysis is further dissected to reflect market geography (sub-market regions) and allow for meaningful analysis. This was considered a necessary step given the high weighting of the UK market (observations) and the (statistical) impact upon sectoral performance. The Continental Europe market was selected at the aggregate level due to low sample size across the various sectors and countries which would not permit meaningful or indeed statistical analysis in terms of robustness. Exploration of the UK market results over the three distinct time periods (Appendices E, F, G) highlights some pertinent insights. Over the entire sample period (2007-2017), the key variables that explain performance are Loan-to-Value, Return on Equity, Growth in Revenue and REIT status (Models 17 – 20), indicating these attributes increase/depress return performance. Interestingly, the Dividend Yield, Growth in Revenue and Investment Focus indicators are not significant and do not enhance risk-adjusted return. When considering the raw return, a disparate finding surfaces. Loan-to-Value is insignificant with all other company specific parameters having statistically significant effects (except Investment Focus and Market Cap). At the sectoral level, Residential, Retail, Industrial and Healthcare all show a significant impact upon risk-adjusted return (Model 17 – Appendix E). The Retail sector has a sizeable negative impact, with Healthcare and to a lesser degree Industrial showing positive influences on return.

For the 2007-2011 period, both Loan-to-Value and Dividend Yield are statistically insignificant. Given this is characterised as a period of extreme market volatility it is noteworthy that Return on Equity and Growth in Revenue were the only statistically significant company specific variables impacting on risk-adjusted return. The 2012-2017 sub-period analysis (Models 25 - 28) shows that Market Capitalisation has become an important predictor ($p<.01$) of performance during the market recovery period. More specifically, it suggests that it depresses risk adjusted return and raw return – maybe suggesting that larger Market Cap companies with concentrated exposures to more traditional RE sub-sectors exhibit a lagged response during the market recovery phase and as a result are underperforming across the time series. This seemingly infers that small(er) companies may have an edge over their larger counterparts in terms of responsiveness and agility to cyclical market trends. Similarly, Loan-to-Value has a larger impact on risk adjusted performance as indicated by the larger magnitude of coefficient. On the contrary, Return on Equity has seen a higher degree of importance in the second half of the sample period. On a risk adjusted basis, its coefficient has increased from 0.053 to 0.079 (Model 21 and Model 25). Moreover, during the 2012-2017 timeframe, REITs in the U.K. have demonstrated a much better performance than their non-REIT counterparts as the positive and statistically significant coefficient suggest (Model 25 and Model 26).

In terms of sector performance, Healthcare, Residential and Industrial have been the leading real estate sectors over the study period with the former's growth improved over the two sub-periods. Interestingly, the Office sector has seen an upward and then downward trend over the same two sub-periods as its coefficient turns from positive to negative (Model 21 and Model 25).

In the Continental Europe context, over the whole investigation period (Appendix H; Models 29-32), it is observed that Market Capitalisation increases raw return ($p<.05$), however, no robust statistical relationship is found for the risk adjusted return. On both a risk adjusted and raw return basis, Return on Equity remains a value enhancing attribute. The Residential sector is the only category of real estate in the sample that exhibits a statistically significant negative relationship with both performance indicators. This implies that the performance of the sector is below that of the base sector (Diversified) over the sample period. Moreover, Investment Focus (I) is negative inferring that non-rental companies perform better than rental companies in terms of return. When return volatility is considered, the comparison between the two groups are less clear as revealed by an insignificant regression coefficient on I.

For sub-period analysis (Appendix I), Market Capitalisation is found to have a positive effect on returns performance. However, its effect becomes less clear during the market recovery (Appendix J) and is statistically insignificant. In addition, the Dividend Yield exhibits a dampening effect on risk adjusted return during both sub-periods. The effect becomes more pronounced during the second sub-period as indicated by a larger magnitude of regression coefficient (Models 37-38). With regards to the Return on quity attribute, it is positively correlated with risk adjusted return during both sub-periods (Models 33–34 and Models 37 – 38), with its effect becoming increasingly more important over time as depicted by the amplification in the magnitude of the coefficient. An interesting finding pertains to the structure and status of the listed companies. Non-REIT and non-rental companies outperformed their REIT and rental counterparts during the first sub-period (Models 33-36). Interestingly, in the market recovery period, the findings show no statistically significant relationship between the two variables and the two performance indicators during the second sub-period.

4.4 Sector-level Analysis

Sector level analysis is conducted in order to ascertain how the country and company level parameters impact upon returns performance, as evidenced in Appendix K-O (Models 41-85) which display the regression results across the three varying time periods. Overall, the sector-level analysis exhibits a very mixed bag of results across both sectors and sub-periods. This is undoubtedly attributable to the different economic fundamentals, business cycles and supply-demand dynamics of the sectors, which respond differently to the changing market climates over the investigation period. The results for the company level variables are as follows[26]:

Market Capitalisation (Cap)

Over the entire sample period (Appendix K), Market Capitalisation appears to drive the risk-adjusted return of Industrial/Office, Speciality, on-REIT, non-Rental and Residential (in ascending order of magnitude of influence), whilst seemingly depressing that of REIT and Diversified (in an ascending order of magnitude of influence). When considering the time dimension, a different picture emerges. Over the first sub-period, in ascending order of magnitude of influence, *Cap* has a positive effect on a number of sectors such as non-REIT, Speciality, non-Rental and Residential (Models 59-67). On the other hand, it negatively impacts the performance of Rental, REIT, Retail and Speciality (in ascending order of magnitude of influence) during the second sub-period (Models 68-76).

Loan-to-Value (L)

Loan-to-Value appears to have an average limiting effect on the risk adjusted performance over the entire sample period (Models 41-49). The coefficient is negative across a number of real estate sectors including Rental, REIT, Diversified and Retail (in ascending order of magnitude of influence). At the sub-period level, the attribute has a negative effect on Diversified, non-Rental and Residential (for the first sub-period). It is noteworthy that the magnitude of its effect on the Residential sector is particularly acute as indicated by its high coefficient value (15.96), compared to (-1.14) for the Diversified sector over the same time period. For the period of 2012-2017(Models 68 – 76), the attribute seemingly drives

[26] All findings based on the 10% level of statistical significance.

the performance of Industrial/Office and Speciality despite some sectors such as Rental, Diversified and Residential being limited by it.

Dividend Yield (D)

The Dividend Yield has a noticeable detrimental effect on performance across the majority of sectors investigated (Models 41-49), with the coefficient negative and statistically significant ($p<.01$) across the sectors of non-REIT, REIT, Diversified, Rental, Retail and Residential (in ascending order of magnitude of influence). On closer inspection, its effect is less 'apparent' during the market downturn period given that only Residential and Rental display a negative coefficient on Dividend Yield (Models 59 -67). For the market recovery phase, the coefficient of Dividend Yield is negative and significant for seven out of the nine sectors, namely Diversified, non-REIT, REIT, Rental, Industrial/Office, Retail and Speciality (in ascending order of magnitude of influence) (Models 68-76).

For the sake of robustness, we further perform the sector-level regression tests for the period of 2007-2017 using indicated Dividend Yield[27]. Unsurprisingly, the results are broadly in line with the above results in that the coefficient on the attribute is negative and statistically significant ($p<.01$) for the sectors of Residential, Retail, REIT, Diversified, Rental and non-REIT (in ascending order of magnitude of influence). This is attributable to the fact that the two Dividend Yield measures are highly correlated over time and across sectors.

Return on Equity (ROE)

The sign of coefficient on Return on Equity is positive and statistically significant at the conventional levels for most sectors with residential being the only exception (Models 41-49). The findings imply that the Return on Equity moves more or less in tandem with risk adjusted return over the sample period. By comparing the magnitude of the coefficients across the sectors, the attribute exhibits an ascending order of impact on Retail, non-REIT, Diversified, Rental, Speciality, REIT, non-Rental and Industrial/Office . The sub-period analysis (Models 59–76) further confirms the growing importance of the attribute for European real estate. Not only does it show that the sign of coefficient of the attribute is positive and statistically significant for eight out of the nine sectors for 2012-2017 (with Speciality being the exception), it also reveals its magnitude has become greater over the two sub-periods[28]: It is in the range of 0.018 (Retail) to 0.045 (Industrial/Office) for 2007-2011 and 0.037 (Retail) to 0.14 (Residential) for 2012-2017 and all sectors have seen an increase in influence of the attribute. In other words, the results suggest that a rise in Return on Equity (on average) increases the risk adjusted return of the listed companies in the corresponding sectors to a larger extent after the first sub-period (market downturn).

Growth in Revenue (REV)

When the entire sample period is considered, growth in revenue is a driver of risk adjusted return for three sectors, namely Residential, REIT and Rental (Model 41 – Model 49). In particular, it affects the Residential sector most markedly with a regression coefficient of 0.77, compared to 0.21 and 0.13 for REIT and Rental respectively. However, when the sub-periods are examined, a different outcome arises: None of the nine sectors displays a statistically significant relationship with the attribute for the first sub-period. In other words, growth in revenue appears to have no statistically noticeable effect on risk adjusted return when the market is in a state of extreme volatility such as the GFC. In addition, only the sector of speciality displays a positive and statistically significant coefficient on REV for the second sub-period. The discrepancy between the results for different investigation periods seem to suggest REV being a long-term determinant of growth of a company for certain sectors.

REIT

As the results (Models 41–49) indicate, REIT status tends to enhance the performance of the majority of real estate sectors including Rental, Retail, Speciality and Residential (in ascending order of magnitude of influence based on the size of coefficients). This confirms the commonly held view that

[27] See Models 77- 85 in Appendices for full results.
[28] The conclusion is drawn based on the results of sectors with ROE having a statistically significant coefficient at the 10% level.

REITs are relatively more regulated and therefore less risky investment vehicles than non-REITs – which in turn explains their superior risk-adjusted return over a longer investment horizon. However, the conclusion should be treated with caution when the temporal context is considered. Based on the results of Models 59 – 67 for the period of 2007 to 2011, only the Speciality sector exhibits a positive and statistically significant relationship with the REIT attribute. More notably, REIT companies underperform their non-REIT counterparts in the Retail sector as depicted by the negative coefficient value. On the other hand, the results for the 2012 -2017 period (Model 68-76) are largely in accord with those of the full period. In particular, REITs in the sectors of Diversified, Rental, Retail, Residential and Speciality outperformed their non-REIT market peers over the five-year horizon.

Investment Focus (I)

In terms of Investment Focus and its effect on a company's risk adjusted return, it reveals significant variations across sector and time period. The full period analysis (Model 41-49) reveals that investment focus has no statistically significant relationship with most of the sectors under investigation except for Residential, which is negatively impacted by the attribute (Model 42). On the other hand, companies that focused on Rental business in the Retail sector outstripped their market competitors with a non-rental focus during the first sub-period as the positive coefficient on I implies (Mode 62). In addition, two sample real estate sectors, namely, Residential and Speciality have their risk adjusted return negatively correlated with the attribute for the second sub-period, whilst companies with a Rental Focus in Industrial/Office achieved a superior risk adjusted return during the same time period of market recovery.

A summary of the attributes across the varying time period splines is displayed in Exhibit 8.

Exhibit 8: Summary of sector level regression tests of the effects of various company specific attribute on risk adjusted return

Investigation Period= 2007-2017									
Attribute/Sector	Diversified	Residential	Ind./Office	Retail	Speciality	REIT	Non-REIT	Rental	Non-rental
Dividend Yield	↓	↓		↓		↓	↓	↓	
LTV	↓			↓		↓		↓	
M. Cap	↓	↑	↑		↑	↓	↑		↑
1-year Rev. Growth		↑				↑		↑	
ROE	↑		↑	↑	↑	↑	↑	↑	↑
Risk Free	↑	↑	↑		↑	↑	↑	↑	↑
REIT		↑		↑	↑	NA	NA	↑	
Rental		↓						NA	NA
Investigation Period= 2007-2011									
Dividend Yield	↓							↓	
LTV	↓	↓							↓
M. Cap		↑			↑		↑		↑
1-year Rev. Growth									
ROE	↑	↑		↑		↑	↑	↑	
Risk Free	↑		↑	↑		↑	↑	↑	
REIT				↓	↑	NA	NA		↑
Rental				↑				NA	NA
Investigation Period= 2012-2017									
Dividend Yield	↓		↓	↓	↓	↓	↓	↓	

LTV	↓	↓	↑		↑			↓	
M. Cap				↓		↓		↓	
1-year Rev. Growth				↑					
ROE	↑	↑	↑	↑		↑	↑	↑	↑
Risk Free	↑				↓				↑
REIT	↑	↑		↑	↑	NA	NA	↑	
Rental	↓	↓	↑		↓			NA	NA

"↑" indicates the attribute enhances the performance of the listed RE companies in the sector/group at the 10% level."↓" indicates the attribute depresses the performance of the listed RE companies in the sector/group at the 10% level. Empty cell indicates regression results on the attribute are not statistically significant at the 10% level.

4.5 Diversification versus Sector Specialisation

A supplementary objective of this study is the exploration as to whether the degree of business diversification of a listed real estate company is value-enhancing. To achieve this, the research constructed a Herfindahl Index *(H.I.)* for each sample company over each predetermined period of time, using annual company-level portfolio data as furnished by EPRA[29]. Exhibit 9 presents the median H.I. for each sample country and the five key real estate sectors in 2016. Interestingly, listed real estate companies in Switzerland and Sweden are the most diversified with a median H.I. equal to 0.31 and 0.40 respectively. On the other hand, the German and Dutch are more inclined to specialising their property investments as revealed by their median H.I. in excess of 0.90. France and the U.K. are moderately diversified with a median H.I. of 0.60 and 0.52 respectively. With regards to sector level diversification, Residential and Speciality are highly specialised as indicated by a median H.I. of 1.00, which are in stark contrast to the Diversified sector with the same figure equal to 0.38.

Exhibit 10 and Exhibit 11 show the scatter plots of risk-adjusted return against H.I. and raw return against H.I. respectively. Each dot in the graphs represents one listed real estate company in our sample. It is noteworthy that the performance variables are weakly correlated with the diversification measure with correlation coefficients equal to 15.23% (Exhibit 10) and 8.89% (Exhibit 11). Nonetheless, the findings should be interpreted with caution since the correlation analyses do not account for other factors that also affect performance.

Exhibit 9 Herfindal Indexes of the sample countries and sectors (sub-sample medians, 2016)

Country	Herfindahl Index (subsample median)	Sector	Herfindahl Index (subsample median)
France	0.60	Diversified	0.38
Germany	0.96	Residential	1.00
The Netherlands	0.92	Industrial/Office	0.86
Sweden	0.40	Retail	0.97
Switzerland	0.31	Speciality	1.00
U.K.	0.52		

[29] In this research HI is a revenue-based measure that reflects the extent to which a firm's revenue is concentrated within its industry/sector segments over a given time period. It is commonly defined as a ratio of the sum of the squares of each reported segment's revenue, $REV_{j,t}$, relative to the firm's overall revenue, $\sum_{j=1}^{n} REV_{j,t}$, over a period of time, t.

Exhibit 10 Relationship between Risk-adjusted Return and Herfindahl Index

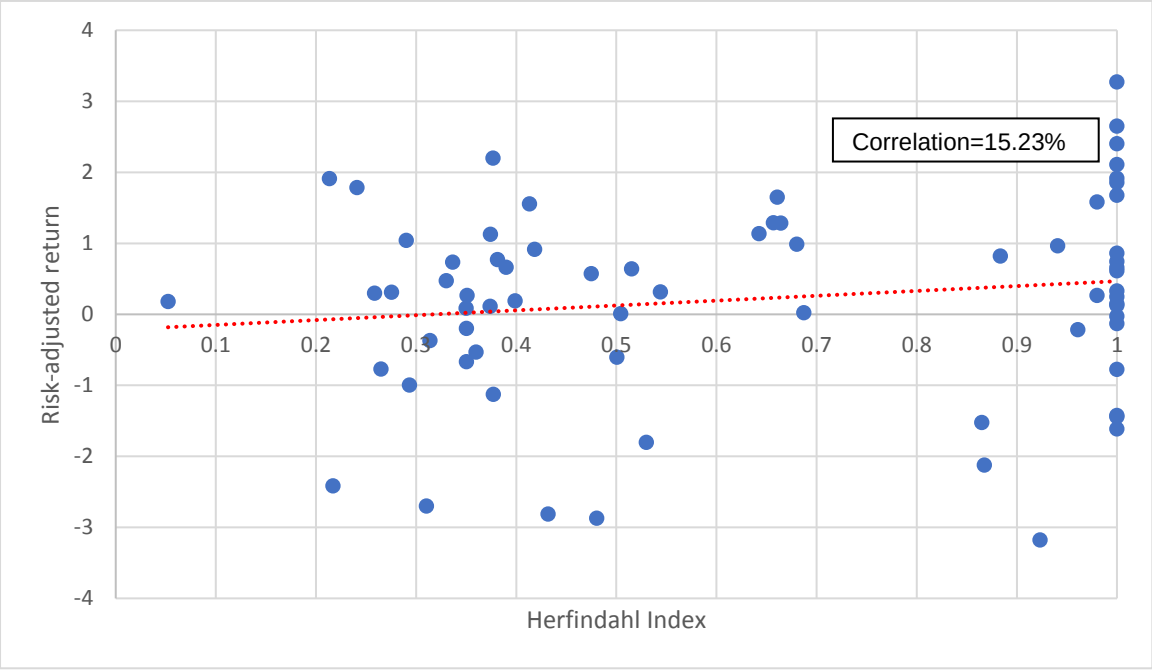
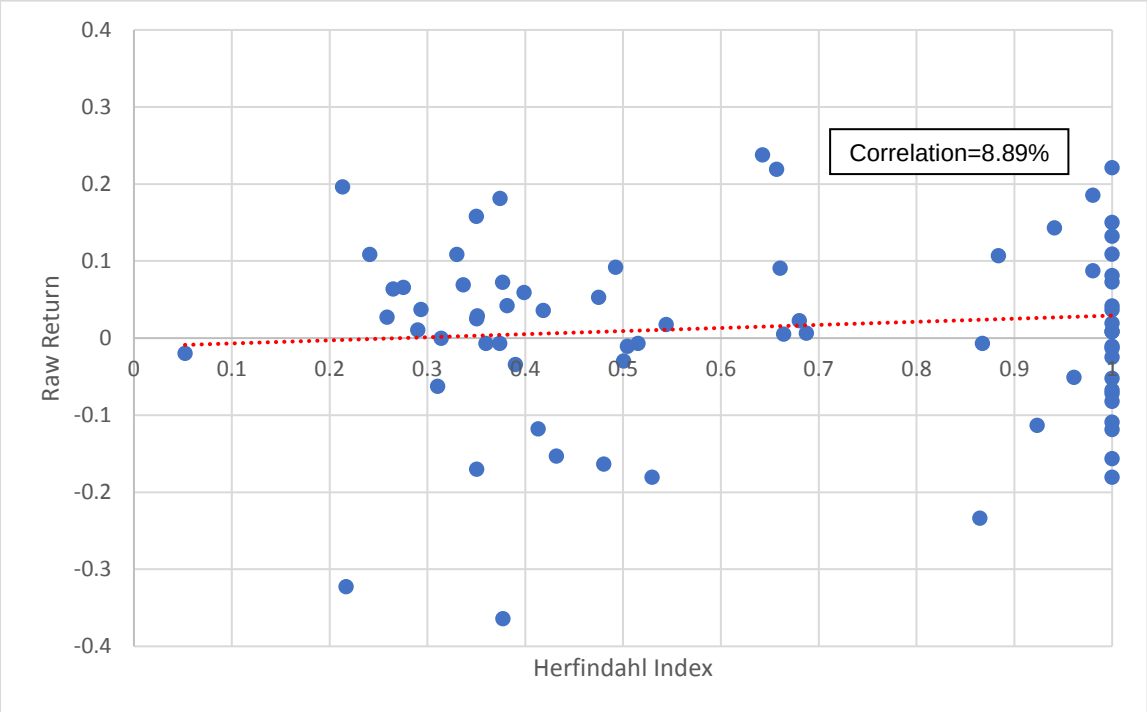


Exhibit 11 Relationship between Raw Return and Herfindahl Index



The results (Exhibit 12) unequivocally suggest that diversification tends to subdue the value of a firm as indicated by the positive and statistically significant coefficient (H.I.). In other words, companies that diversify by investing in more sectors appear prone to having lower total returns than their industry peers with a concentrated business focus. The results appear robust in that the diversification effect remained negative and significant across all model architectures.

Exhibit 12 Diversification Tests – All countries at the aggregate level, 2012-2016

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	**Model 86**	**Model 87**	**Model 88**	**Model 89**
	c	-1.193783 (0.5818)	-2.148663 (0.3266)	0.191242 (0.4245)	0.105861 (0.6599)
Time Variables (Base=Year 2012)	**Year 2013**	1.445472 (0.0000) ***	1.435040 (0.0000) ***	0.020169 (0.6094)	0.019047 (0.6296)
	Year 2014	2.017400 (0.0000) ***	1.992374 (0.0000) ***	-0.069346 (0.1256)	-0.071709 (0.1135)
	Year 2015	2.123395 (0.0000) ***	2.106529 (0.0000) ***	-0.094445 (0.0336) **	-0.096298 (0.0305) **
	Year 2016	-0.213456 (0.6604)	-0.231143 (0.6349)	-0.292487 (0.0000) ***	-0.294356 (0.0000) ***
Country Variables (Base = U.K.)	**France**	-0.452737 (0.1690)	-0.413959 (0.2163)	-0.065209 (0.0761) *	-0.060226 (0.1071)
	Germany	0.415132 (0.3586)	0.549681 (0.2229)	-0.073189 (0.1412)	-0.061749 (0.2115)
	The Netherlands	-1.390695 (0.0007) ***	-1.307371 (0.0014) ***	-0.159040 (0.0004) ***	-0.151631 (0.0008) ***
	Sweden	0.928161 (0.0294) **	0.958411 (0.0258) **	-0.022675 (0.6304)	-0.018823 (0.6912)
	Switzerland	0.518982 (0.4573)	0.414677 (0.5505)	-0.158097 (0.0431)*	-0.165855 (0.0330) **
Company-specific Variables	**Market Capitalisation (Cap)**	0.148089 (0.4717)	0.280256 (0.1744)	0.011110 (0.6227)	0.022764 (0.3146)
	Loan to Value (L)	-1.680170 (0.0685) *	-1.552696 (0.0910) *	-0.067034 (0.5081)	-0.057524 (0.5681)
	Dividend Yield (D)	-0.031445 (0.1080)	-0.028863 (0.1411)	-0.002153 (0.3223)	-0.001925 (0.3761)
	Return Volatility (V)	NA	NA	1.033764 (0.0000) ***	1.030136 (0.0000) ***
	REIT (REIT)	0.191163 (0.4874)	0.216232 (0.4311)	-0.008576 (0.7860)	-0.007338 (0.8155)
	Investment Focus (I)	0.133282 (0.6702)	0.148873 (0.6346)	0.005341 (0.8782)	0.006366 (0.8549)
Diversification Variables	**H.I.**	0.768596 (0.0217) **	NA	0.064214 (0.0821) *	NA
	S.S.	NA	0.461669 (0.0367) **	NA	0.042906 (0.0784) *

	Risk free (r.f.)	25.65190 (0.5246)	25.78575 (0.5232)	-7.739743 (0.0812) *	-7.711103 (0.0823) *
	Included Obs.	272	272	272	272
	R^2	0.440788	0.438801	0.398201	0.398380
	Adjusted R^2	0.405701	0.403589	0.357923	0.358114
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000

Note: *p*-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level. Note that ROE and REV are removed due to data limitations.

4.6 Decomposition Analysis

Decomposition analysis was further undertaken to test the explanatory power of the attributes in order to determine how much each attribute (or group of attributes) account for the variation of risk adjusted return[30]. The analysis explores the explanatory power of the attributes over the three sub-periods and at the aggregate and sub-regional levels (U.K. and collective continental European countries). In addition, it is revealed that the countries variables can explain the variation of risk adjusted return more than the sector dummies (when method A is utilised, the opposite is observed when method B is employed). In terms of company specific attributes, unsurprisingly, Return on Equity has the highest explanatory power, both individually (41.14%) and marginally (4.63%), with Market Capitalisation accounting for 6.33% and 0.02% respectively. Other regressors such as Growth in Revenue, REIT and Investment Focus play a much less significant role in terms of explanatory power (Exhibit 13). Moreover, the results also highlight that the heterogeneity between sectors across the sample countries has grown over time, as indicated by the increase in explanatory power of the sector dummies over the two sub-periods: from 3.51% to 4.10% and 0.82% to 2.80% employing both methods.

Exhibit 13: All Countries power of attributes over the three time regimes

	2007-2017 *(Model 1)*		*2007-2011* *(Model 9)*		*2012-2017* *(Model 13)*	
	Explanatory Power from using each (set of) variable(s) alone **(Method A)**	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others** **(Method** B)	**Explanatory Power from using each (set of) variable(s) alone** **(Method A)**	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others** **(Method** B)	**Explanatory Power from using each (set of) variable(s) alone** **(Method A)**	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others** **(Method** B)
Country Level						
Country Variables	2.39%	1.45%	5.66%	1.77%	7.36%	1.20%
Sector Level						
Sector Variables	1.94%	6.15%	3.51%	0.82%	4.10%	2.80%
Company Level						
Market Capitalisation	6.33%	0.02%	7.12%	0.19%	1.16%	0.14%

[30] The decomposition approach employs a "partial R^2" contribution to the models as advocated by Connor (1995). Method A: assessment of the coefficient of determination of a regression model with risk-adjusted return as the dependent. Method B: assessing the difference in the level of coefficient of determination between two regression models; 1 with all attributes as independent variables except the subject attribute(s); the other with all attributes as independent variables – the marginal increase in explanatory power through an additive approach which already includes all other regressors.

Loan to Value	2.26%	0.45%	1.33%	0.13%	0.74%	0.73%
Dividend Yield	12.09%	0.77%	7.45%	0.29%	12.70%	1.98%
Return On Equity	41.14%	4.63%	49.44%	3.73%	20.70%	5.44%
Growth in Revenue	0.10%	0.03%	0.07%	0.06%	0.68%	0.00%
REIT	0.10%	0.15%	0.02%	0.02%	0.10%	0.95%
Investment Focus	0.00%	0.00%	0.04%	0.01%	0.18%	0.02%
All company specific attributes	43.62%	10.53%	51.18 %	9.53%	25.91%	11.51%

By comparing the change in the size of explanatory power, we observe that Market Capitalisation has shown a reduced significance in terms of explanatory power over time. The results for Return on Equity are, however, slightly more ambiguous. Over the two sub-periods, the variable has displayed a rise in explanatory power at the margin (from 3.73% to 5.44%) but a remarkable reduction (49.44% to 20.7%) when it is encapsulated alone as the independent variable in the regression model. It is also interesting to note that Dividend Yield has become a much more important attribute in explaining risk adjusted performance over time, judged by its change in partial R^2 contributed to the regression models. When all company specific attributes are considered as one block, their collective explanatory power (43.62% individually and 10.53% marginally) is larger than that of the sector level attributes combined (1.94% individually and 6.15% marginally) over the whole investigation. In this sense, company specific characteristics cannot be underestimated in their contribution to overall performance dynamics and in essence require due diligence on a par with sectoral focus. Interestingly, the real estate sectors of the UK market seem to have become more divergent in terms of risk-adjusted return over time. The sector variables account for only 1.24% of the variation of risk adjusted return for the first sub-period, while the same figure increases to 5.53% for the second sub-period (Exhibit 14). Their explanatory power has risen at the margin as well, from 0.67% to 4.39% over the same time horizon.

Exhibit 14 U.K. Explanatory power of attributes over the three time regimes

	2007-2017 (Model 17)		*2007-2011 (Model 21)*		*2012-2017 (Model 25)*	
	Explanatory Power from using each (set of) variable(s) alone (Method A)	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others (Method B)**	**Explanatory Power from using each (set of) variable(s) alone (Method A)**	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others (Method B)**	**Explanatory Power from using each (set of) variable(s) alone (Method A)**	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others (Method B)**
Sector Level						
Sector Variables	3.05%	1.11%	1.24%	0.67%	5.53%	4.26%
Company Level						
Market Capitalisation	4.50%	0.02%	3.24%	0.02%	0.32%	0.26%
Loan to Value	4.84%	0.79%	5.36%	0.15%	0.55%	1.70%
Dividend Yield	9.18%	0.01%	10.48%	0.03%	2.96%	0.20%

Return On Equity	56.52%	4.92%	65.43%	8.51%	34.47%	5.70%
Growth in Revenue	0.26%	0.07%	0.61%	0.31%	0.23%	0.03%
REIT	0.74%	0.23%	0.01%	0.01%	1.30%	1.19%
Investment Focus	0.25%	0.08%	0.11%	0.15%	0.92%	0.22%
All company specific attributes	57.82 %	9.52%	66.23%	11.78%	39.76%	24.16%

In addition, the importance of corporate structure has grown quite considerably over the analysis period. The REIT variable captures only 0.01% of risk adjusted return variation for the period of 2007-2011, nonetheless, its explanatory power increases significantly to 1.30% (Method A) and 1.20% (Method B) for the period of 2012-2017 – albeit relatively low in absolute terms. Along the same line of logic, Growth in Revenue has seen a reduced significance while Investment Focus has displayed a slight increase in importance in terms of explanatory power over the same time period. The results for other company specific attributes such as Market Capitalisation, Loan-to-Value and Dividend Yield are less clear: whilst they have exhibited an increase in partial R^2 at the margin over the two sub-periods, the opposite holds when the regressors are used alone as the independent variable in the regression models.

In contrast to the UK, the Continental Europe region has become much more convergent in terms of risk-adjusted performance at the sector level depicted by the sizable decrease in the partial R^2 value of the sector variables from 11.32% to 3.94% and 2.57% to 0.83% respectively (Exhibit 15). Compared to the U.K. real estate market, the Market Capitalisation and Dividend yield are more important attributes in explaining the performance of risk adjusted return in Continental Europe across all period and sub-periods examined. For example, Market Capitalisation in Continental Europe accounts for 9.48% (4.50% in the U.K.), 15.77% (3.24 % in the U.K.) and 2.94% (0.32% in the U.K.) of the total coefficient of determination over the periods of 2007-2017, 2007-2011 and 2012-2017 respectively. The corresponding figures for the Dividend Yield are 19.96% (9.18% in the U.K.), 12.42% (10.48% in the U.K.) and 24.24% (2.96% in the U.K.) over the same time horizons.

In terms of explanatory power, another company specific attribute that is noteworthy for the Continental European market is Return on Equity. Its partial contribution to the R^2 is 17.77% and 2.78%, individually and marginally for the whole sample period. Despite its declining importance over time, it still comprises 9.25% when used alone in the equation and 1.08% at the margin of the total variation of the risk adjusted return models for the period of 2012-2017 (compared to 25.48% and 1.81% respectively for the period of 2007-2011).

Exhibit 15 Continental Europe Explanatory power of attributes over the three time regimes

	2007-2017 *(Model 29)*		*2007-2011* *(Model 33)*		*2012-2017* *(Model 37)*	
	Explanatory Power from using each (set of) variable(s) alone **(Method A)**	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others** **(Method B)**	**Explanatory Power from using each (set of) variable(s) alone** **(Method A)**	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others** **(Method B)**	**Explanatory Power from using each (set of) variable(s) alone** **(Method A)**	**Increase in Explanatory Power from adding each (set of) variable(s) to all the others** **(Method B)**
Sector Level						
Sector Variables	1.17%	0.25%	11.32%	1.53%	3.94%	0.36%

Company Level						
Market Capitalisation	9.48%	0.19%	15.77%	0.81%	2.94%	0.20%
Loan to Value	1.67%	0.04%	3.14%	0.01%	0.02%	0.09%
Dividend Yield	19.96%	2.24%	12.42%	0.64%	24.24%	4.71%
Return On Equity	17.77%	2.78%	25.48%	1.81%	9.25%	1.08%
Growth in Revenue	0.01%	0.63%	0.05%	0.08%	1.25%	0.08%
REIT	2.44%	0.19%	0.02%	0.27%	7.92%	0.24%
Investment Focus	0.53%	0.16%	1.20%	0.32%	0.03%	0.08%
All company specific attributes	29.90%	8.62%	36.35%	6.09%	25.31%	7.62%

5.0 CONCLUSIONS

This study can help institutional investors considering European listed real estate companies to more fully understand and comprehend the performance drivers attributable to corporate structures and company specific attributes. The research demonstrates that company specific attributes play an important role in the optimisation of performance in real estate upcycles and in 'sheltering' companies in down-cycles. Indeed, the flexibility and responsiveness of companies to cyclical trends and indicators merits more detailed exploration. Specifically, this study highlighted how higher LTV ratios have a negative impact on risk-adjusted performance in a market down cycle whilst serving to extenuate performance during the real estate recovery phase. Further to this, the relationship between dividend yield and risk-adjusted performance implies that companies that retain and reinvest profits amidst turbulent market conditions have realised superior performance over the investigation period Q1 2007 – Q3 2017.

The continued growth and development of new sectors is a pertinent feature of the listed real estate sector. This offers considerable new scope for investors to diversify their portfolios beyond the conventional office, and retail allocations. Indeed, this research has demonstrated the capacity of these new 'niche' sectors to outperform and to offer investors opportunities in more economically resilient assets. In terms of 5-year total return, self-storage, industrial and residential have been the best performing sectors posting total returns of 25.29%, 21.16% and 20.66% respectively since 2012. By contrast, retail has been the worst performing sector with total return rates of 6.49% over the same period. It is further noteworthy for investors seeking to build greater economic resilience into their real estate portfolios that the healthcare sector posted the best risk-adjusted performance over the period Q1 2007 – Q3 2017.

In terms of structural composition, it is noteworthy in our statistical analysis that REITs outperformed non-REITs over the investigation period on a risk-adjusted basis. Increased market maturity and more robust regulatory frameworks served the sector well in the post-GFC era. This allied with complimentary niche sector opportunities, have all been factors in contributing to the out-performance of REITs.

The debate pertaining to sector specialists versus diversified listed real estate companies is long-running, with contrasting views and opinions. This study contributed to that ongoing debate. Using H.I time series constructs, the analysis determines that sector specialists have outperformed in the period

Q1 2007 – Q3 2017. Furthermore, the regression analysis details value enhancing attributes attributable to sector specialisation.

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Appendices

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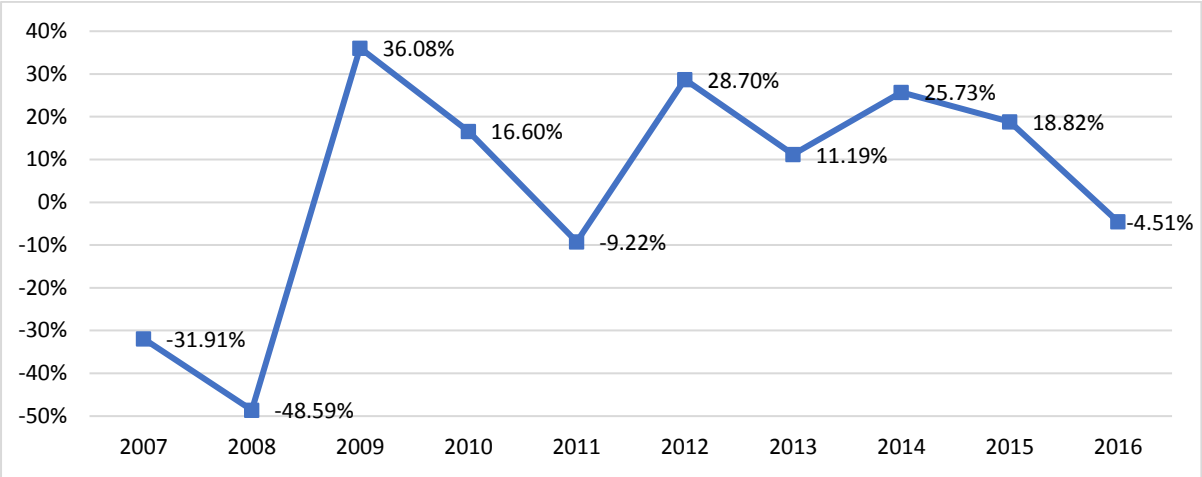
2019

Appendices

(i)Historical total returns of the Developed Europe's listed real estate



Source: EPRA (2017) and authors' compilation

(i) Correlation coefficients of total returns of the six sample countries (2007-2017)

	Developed Europe	France	Germany	Netherlands	Sweden	Switzerland
Developed Europe	100.00%					
France	93.78%	100.00%				
Germany	92.79%	82.86%	100.00%			
Netherlands	90.46%	89.88%	80.71%	100.00%		
Sweden	82.99%	72.78%	85.63%	79.28%	100.00%	
Switzerland	52.66%	46.32%	66.78%	43.68%	81.04%	100.00%
U.K.	96.62%	85.30%	88.03%	80.23%	75.52%	41.40%

Source: Authors' calculations based on FTSE EPRA/NAREIT Developed Europe Index Series

(ii)Number of constituents by sector for the six sample countries (2007-2017)

Country	Diversified	Resid	Retail	Office	Industrial	Industrial/ Office	Health-care	Self-Storage	Lodging/ Resorts	Speciality
France	7	0	3	4	0	0	0	0	0	0
Germany	6	12	2	4	0	0	0	0	0	0
Netherlands	2	0	6	1	1	0	0	0	0	0
Sweden	8	1	0	1	0	0	0	0	1	0
Switzerland	5	0	0	4	0	0	0	0	0	0
UK	28	4	9	5	4	2	4	2	1	1
Total	56	17	20	19	5	2	4	2	2	1

Source: EPRA (2007- 2017) and authors' calculations

(iii) Due to data limitations, the sectors were further compartmentalised into five principal sectors with Industrial, Office and Industrial/office classified as Industrial/office and Healthcare, Self-storage, Lodging/resorts and Speciality classified as Speciality. To explicitly remove the performance component of non-sample countries captured by FTSE EPRA/NAREIT Developed Europe Index, the research investigated the construction of more customised annual total return indices based on company-level data. This was extracted using the Bloomberg database specifically for the six sample countries. The indices were linearly weighted by year-end market capitalisation of all sample companies, to account for proportionality and attached with more significance. In our study, only stock exchange-listed companies in the sample countries that have been constituents of FTSE EPRA/NAREIT over the investigation period were included in the indices. The results reveal the historical performance of the five main sectors (2007-2016) to be broadly synchronised.

Capitalisation-weighted return of the five selected real estate sectors (2007-2016)

Source: Authors' compilation based on Bloomberg (2017)

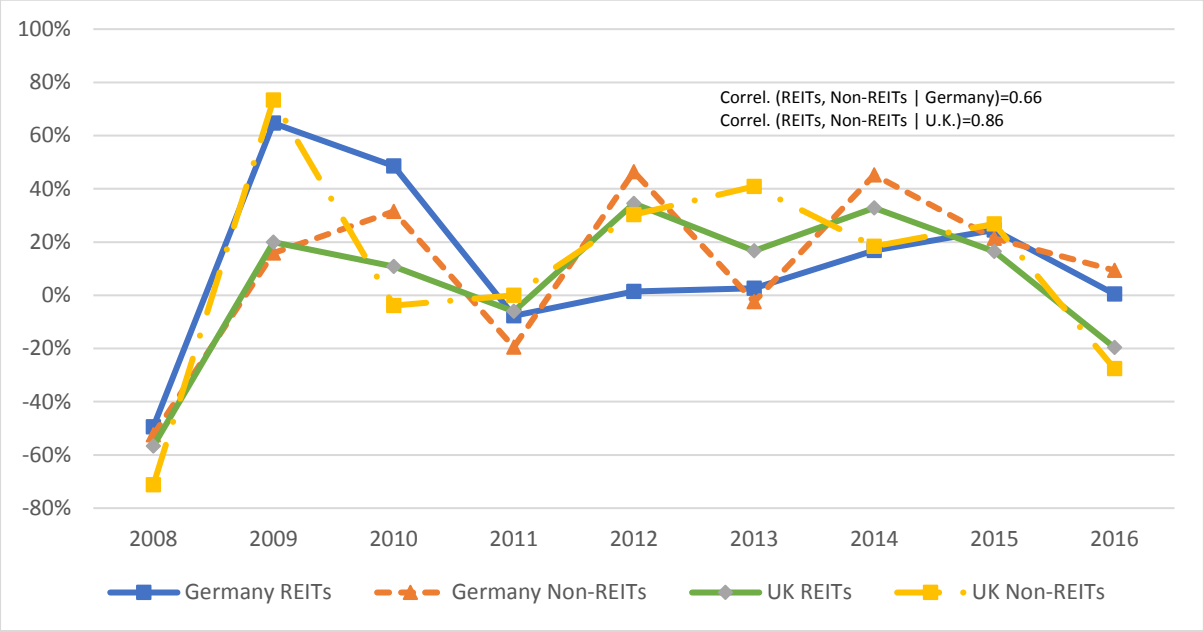
(iv) Descriptive statistics and performance-related features of REIT and non-REIT sectors in Developed Europe and the six sample markets based on data derived from EPRA Research Monthly Statistical Bulletin (October, 2017).

Country/Region	Sector	M. Cap (€M)	Div Yld (%)	Total. Rtn (%) - 10 Yrs	Total. Rtn (%) – 5 Yrs	Total. Rtn (%) – 1Yr	Total. Rtn (%) – QTD	10 Y Vlty (%)	36 M Vlty (%)
Developed Europe	REITs	122,388.37	4.11	NA	9.43	9.56	0.85	13.60	13.77
	Non-REITs	89,720.87	4.80	6.95	13.36	7.31	-0.60	11.81	12.29
France	REITs	20,615.01	4.74	6.97	9.49	6.78	1.23	19.21	15.34
Germany	REITs	2,298.51	4.41	4.45	9.97	7.17	0.19	26.41	12.16
	Non-REITs	46,145.85	2.82	NA	18.41	20.13	3.02	15.14	16.01
Netherlands	REITs	25,774.29	5.06	NA	7.83	3.94	3.45	15.11	15.35

Sweden	Non-REITs	18,181.12	2.57	NA	18.10	15.44	1.29	14.77	14.30
Switzerland	Non-REITs	11,477.82	4.01	7.09	11.09	0.67	3.57	12.68	14.27
U.K.	REITs	53,447.73	3.68	NA	8.44	12.11	0.26	16.35	17.30
	Non-REITs	6,936.03	2.41	NA	10.42	15.12	1.13	15.24	16.17

Source: EPRA Research Monthly Statistical Bulletin (October 2017)

Historical total returns of REIT and Non-REITs in Germany and the U.K.



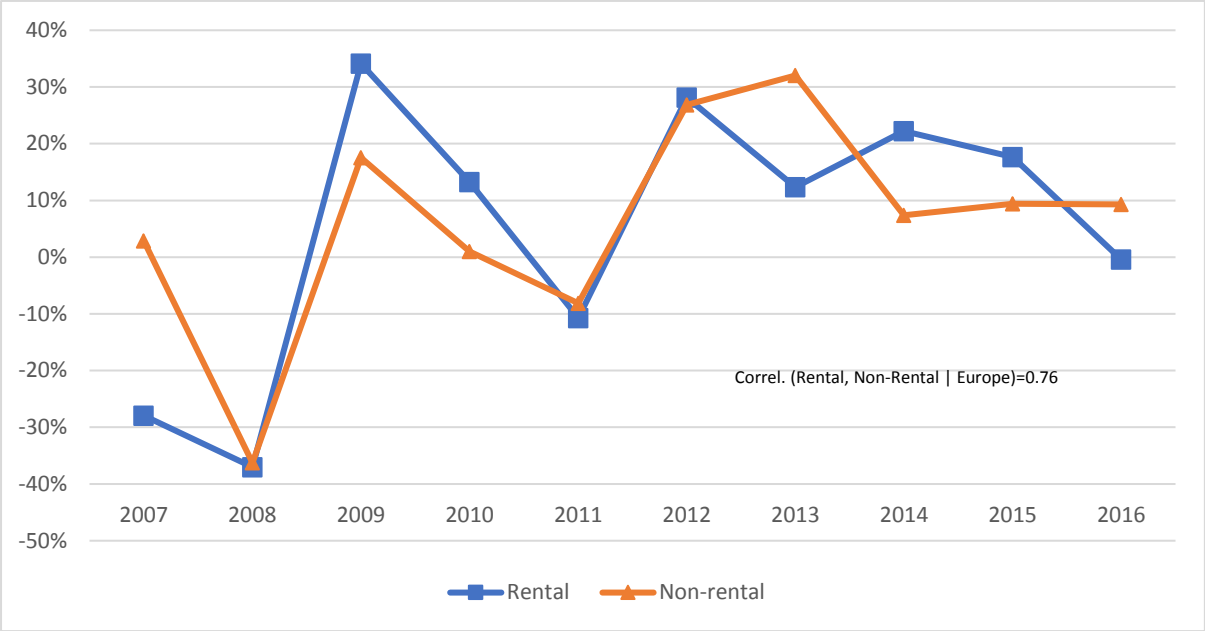
Source: Authors' compilation based on FTSE EPRA/NAREIT Developed REIT/Non-REIT Index Series (Germany and the U.K.)

(v) Descriptive statistics of rental and non-rental sectors in Europe and the U.K.

	Country/ Region	Sector	M. Cap (€M)	Div Yld(%)	Total. Rtn (%) - 10 Yrs	Total. Rtn (%) – 5 Yrs	Total. Rtn (%) – 1Yr	Total. Rtn (%) – QTD	10 Y Vlty (%)	36 M Vlty (%)
Rental/ Non-rental	Europe	Rental	193,922.38	3.56	NA	10.80	12.49	1.30	11.90	12.65
		Non-rental	20,005.62	3.77	4.33	30.49	8.17	-1.56	40.20	10.04
	U.K.	Rental	58,741.48	3.58	-1.15	8.46	11.83	0.24	21.73	12.65
		Non-rental	1,642.27	1.91	-5.05	15.67	30.95	3.92	26.11	17.98

Source: EPRA Research Monthly Statistical Bulletin (October 2017)

Historical total returns of rental and non-rental sectors in Europe



Source: Authors' compilation based on FTSE EPRA/NAREIT Developed Europe Investment Focus indices

Appendices B-N (Regression models)

Exhibit 7 **Full model** (1-4) All countries at the aggregate level

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	**Model 1**	**Model 2**	**Model 3**	**Model 4**
	C	-2.381206 (0.0155)**	-2.167843 (0.0259)**	-0.522160 (0.0014)***	-0.442909 (0.0060)***
Time Variables (Base = Year 2007)	**Year 2008**	-2.099385 (0.0000)***	-2.135370 (0.0000)***	-0.138848 (0.0000)***	-0.139688 (0.0000)***
	Year 2009	-1.168509 (0.0000)***	-1.198430 (0.0000)***	0.170392 (0.0000)***	0.174702 (0.0000)***
	Year 2010	1.049584 (0.0000)***	1.024520 (0.0000)***	0.344151 (0.0000)***	0.360154 (0.0000)***
	Year 2011	1.510232 (0.0000)***	1.493257 (0.0000)***	0.236240 (0.0000)***	0.242380 (0.0000)***
	Year 2012	0.821009 (0.0058)***	0.817262 (0.0061)***	0.280490 (0.0000)***	0.290836 (0.0000)***
	Year 2013	1.981757 (0.0000)***	1.981643 (0.0000)***	0.390448 (0.0000)***	0.399504 (0.0000)***
	Year 2014	2.778617 (0.0000)***	2.788153 (0.0000)***	0.415230 (0.0000)***	0.424331 (0.0000)***
	Year 2015	3.099214 (0.0000)***	3.127410 (0.0000)***	0.424132 (0.0000)***	0.435106 (0.0000)***
	Year 2016	1.782366 (0.0000)***	1.826275 (0.0000)***	0.256310 (0.0000)***	0.271762 (0.0000)***
	Year 2017	1.355372 (0.0002)***	1.387920 (0.0002)***	0.307281 (0.0000)***	0.318216 (0.0000)***
Country Variables	**France**	-0.140748 (0.3543)	-0.240091 (0.1096)	0.022477 (0.3723)	0.009748 (0.6963)
	Germany	0.881473 (0.0000)***	0.803443 (0.0000)***	0.095996 (0.0000)***	0.095186 (0.0000)***
	The Netherlands	0.253001 (0.0870)*	0.158126 (0.2801)	0.087810 (0.0003)***	0.074782 (0.0020)***
	Sweden	0.948997 (0.0000)***	0.884043 (0.0000)***	0.097515 (0.0002)***	0.102416 (0.0001)***
	Switzerland	1.396616 (0.0000)***	1.314598 (0.0000)***	0.115291 (0.0020)***	0.113916 (0.0017)***
Com	**Market Capitalisation (Cap)**	0.104514 (0.2938)	0.063260 (0.5186)	0.021800 (0.1860)	0.011719 (0.4694)

	Loan to Value (L)	-1.429240 (0.0000)***	-1.211183 (0.0001)***	-0.009848 (0.8533)	-0.015679 (0.7621)
	Dividend Yield (D)	-0.071747 (0.0000)***	-0.065916 (0.0000)***	-0.021295 (0.0000)***	-0.020164 (0.0000)***
	Return On Equity (ROE)	0.042413 (0.0000)***	0.043140 (0.0000)***	0.003544 (0.0000)***	0.003743 (0.0000)***
	Return Volatility (V)	N.A.	N.A.	0.494975 (0.0000)***	0.436210 (0.0000)***
	Growth in Revenue (REV)	0.064805 (0.2566)	0.076782 (0.1788)	0.022176 (0.0189)**	0.020703 (0.0284)**
	REIT (REIT)	0.298739 (0.0107)**	0.378545 (0.0007)***	0.044527 (0.0219)**	0.062089 (0.0006)***
	Investment Focus (I)	-0.023849 (0.8404)	0.000507 (0.9965)	-0.017452 (0.3729)	-0.020721 (0.2827)
Sector Variables (Base = Diversified)	**Residential**	-0.159578 (0.2775)	-0.120126 (0.4126)	-0.035161 (0.1488)	-0.022383 (0.3560)
	Retail	-0.315058 (0.0036)***	-0.299048 (0.0058)***	-0.051266 (0.0041)***	-0.048404 (0.0069)***
	Industrial/ **Industrial**	0.550200 (0.0014)***	0.169453 (0.0962)*	0.027061 (0.3406)	-0.001591 (0.9249)
	Industrial/ **Office**	0.034288 (0.7679)		-0.011459 (0.5512)	
	Industrial/ **Industrial/Office**	0.593242 (0.2835)		0.125789 (0.1688)	
	Speciality **Lodging/Resorts**	-0.336248 (0.7236)	0.423914 (0.0074)***	-0.059489 (0.7049)	0.009361 (0.7208)
	Speciality **Health care**	0.984589 (0.0000)***		0.071229 (0.0537)*	
	Speciality **Self storage**	0.053821 (0.8254)		0.048905 (0.2257)	
	Speciality **Speciality**	0.188440 (0.5820)		-0.196913 (0.0009)***	
	Risk free (r.f.)	53.34203 (0.0000)***	53.64914 (0.0000)***	4.962113 (0.0008)***	5.098533 (0.0006)
	Included Obs.	1616	1616	1616	1616
	R^2	0.643524	0.639435	0.466448	0.459885
	Adjusted R^2	0.636318	0.633304	0.455318	0.450355
	Prob (F Stat)	0.0000	0.0000	0.000000	0.000000

Regression Results(B) All countries at the aggregate level, 2007-2017

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	Model 5	Model 6	Model 7	Model 8
	C	-2.093597 (0.0325) **	-1.933588 (0.0461) **	-0.572438 (0.0006) ***	-0.501214 (0.0022) ***
Time Variables (Base = Year 2007)	Year 2008	-2.081242 (0.0000) ***	-2.116736 (0.0000) ***	-0.144239 (0.0000) ***	-0.144976 (0.0000) ***
	Year 2009	-1.197479 (0.0000) ***	-1.219312 (0.0000) ***	0.144165 (0.0001) ***	0.150002 (0.0001) ***
	Year 2010	1.039974 (0.0000) ***	1.019812 (0.0000) ***	0.332503 (0.0000) ***	0.349574 (0.0000) ***
	Year 2011	1.473913 (0.0000) ***	1.466365 (0.0000) ***	0.217102 (0.0000) ***	0.224652 (0.0000) ***
	Year 2012	0.810136 (0.0061) ***	0.816187 (0.0058) ***	0.263487 (0.0000) ***	0.275138 (0.0000) ***
	Year 2013	1.967696 (0.0000) ***	1.977075 (0.0000) ***	0.375386 (0.0000) ***	0.385653 (0.0000) ***
	Year 2014	2.766508 (0.0000) ***	2.787407 (0.0000) ***	0.401001 (0.0000) ***	0.411586 (0.0000) ***
	Year 2015	3.080008 (0.0000) ***	3.121139 (0.0000) ***	0.403446 (0.0000) ***	0.416129 (0.0000) ***
	Year 2016	1.760230 (0.0000) ***	1.817073 (0.0000) ***	0.231327 (0.0003) ***	0.248263 (0.0001) ***
	Year 2017	1.331187 (0.0003) ***	1.375745 (0.0002) ***	0.281681 (0.0000) ***	0.293660 (0.0000) ***
Country Variables	France	-0.152803 (0.3089)	-0.257654 (0.0822)	0.007889 (0.7562)	-0.004945 (0.8442)
	Germany	0.909587 (0.0000) ***	0.830887 (0.0000) ***	0.091022 (0.0001) ***	0.091101 (0.0000) ***
	The Netherlands	0.293102 (0.0493) **	0.186476 (0.2054)	0.088512 (0.0004) ***	0.073771 (0.0030) ***
	Sweden	0.986843 (0.0000) ***	0.919510 (0.0000) ***	0.097463 (0.0003) ***	0.102888 (0.0001) ***
	Switzerland	1.461552 (0.0000) ***	1.375221 (0.0000) ***	0.108111 (0.0043) ***	0.108054 (0.0033) ***
Company-specific Variables	Market Capitalisation (Cap)	0.071593 (0.4677)	0.033925 (0.7266)	0.030283 (0.0692) *	0.020782 (0.2043)
	Loan to Value (L)	-1.424155 (0.0000) ***	-1.207120 (0.0001) ***	-0.021459 (0.6902)	-0.028824 (0.5819)
	Dividend Yield (D)[1]	-0.084818 (0.0000) ***	-0.075943 (0.0000) ***	-0.020548 (0.0000) ***	-0.018884 (0.0000) ***
	Return On Equity (ROE)	0.041817 (0.0000) ***	0.042713 (0.0000) ***	0.003456 (0.0000) ***	0.003680 (0.0000) ***
	Return Volatility (V)	N.A.	N.A.	0.505174 (0.0000) ***	0.445431 (0.0000) ***

[1] Indicated dividend yield is used.

	Growth in Revenue (REV)	0.057147 (0.3130)	0.069161 (0.2221)	0.022348 (0.0194) **	0.020881 (0.0290) **
	REIT (REIT)	0.320865 (0.0058) ***	0.401416 (0.0003) ***	0.041541 (0.0350) **	0.058948 (0.0021) ***
	Investment Focus (I)	0.023160 (0.8445)	0.041424 (0.7209)	-0.014975 (0.4526)	-0.019476 (0.3209)
Sector Variables (Base = Diversified)	Residential	-0.066130 (0.6508)	-0.024714 (0.8654)	-0.027457 (0.2669)	-0.014232 (0.5631)
	Retail	-0.296860 (0.0056) ***	-0.280706 (0.0090) ***	-0.049001 (0.0068) ***	-0.045998 (0.0112) **
	Industrial/ Industrial	0.567874 (0.0009) ***	0.166727 (0.0988) *	0.023727 (0.4094)	-0.002487 (0.8842)
	Industrial/ Office	0.027122 (0.8139)		-0.010774 (0.5801)	
	Industrial/ Industrial/Office	0.495788 (0.3658)		0.103907 (0.2613)	
	Speciality Lodging/Resorts	-0.284325 (0.7629)	0.425229 (0.0066) ***	-0.055751 (0.7258)	0.017768 (0.5021)
	Speciality Health care	0.993264 (0.0000) ***		0.081537 (0.0290) **	
	Speciality Self storage	0.065126 (0.7876)		0.054925 (0.1786)	
	Speciality Speciality	0.144671 (0.6710)		-0.192599 (0.0014) ***	
	Risk free (r.f.)	53.43272 (0.0000) ***	54.01309 (0.0000)***	3.433699 (0.0217) **	3.620415 (0.0159) **
	Included Obs.	1614	1614	1614	1614
	R^2	0.644187	0.639895	0.462117	0.455770
	Adjusted R^2	0.636985	0.633765	0.450883	0.446156
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (C) - All countries at the aggregate level, 2007-2011

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	Model 9	Model 10	Model 11	Model 12
	C	-5.852474 (0.0002) ***	-5.067967 (0.0006) ***	-1.231368 (0.0002) ***	-0.933988 (0.0027) ***
Time Variables (Base = Year 2007)	Year 2008	-2.227076 (0.0000) ***	-2.242966 (0.0000) ***	-0.115892 (0.0075) ***	-0.122118 (0.0051) ***
	Year 2009	-1.279850 (0.0000) ***	-1.290979 (0.0000) ***	0.214454 (0.0001) ***	0.214042 (0.0001) ***
	Year 2010	1.360264 (0.0000) ***	1.340207 (0.0000) ***	0.446283 (0.0000) ***	0.453418 (0.0000) ***
	Year 2011	1.890147 (0.0000) ***	1.867853 (0.0000) ***	0.380803 (0.0000) ***	0.374876 (0.0000) ***
C o	France	-0.066927	-0.156070	0.005947	-0.016496

		(0.8067)	(0.5628)	(0.9172)	(0.7719)
	Germany	0.680550 (0.0037) ***	0.755932 (0.0010) ***	0.173169 (0.0004) ***	0.198528 (0.0000) ***
	The Netherlands	0.505760 (0.0103) **	0.419535 (0.0293) **	0.127238 (0.0020) ***	0.099811 (0.0134) **
	Sweden	0.888977 (0.0006) ***	1.047442 (0.0000) ***	0.216731 (0.0001) ***	0.266764 (0.0000) ***
	Switzerland	2.147686 (0.0000) ***	2.362475 (0.0000) ***	0.314001 (0.0004) ***	0.379239 (0.0000) ***
Company-specific Variables	Market Capitalisation (Cap)	0.358811 (0.0398) **	0.264763 (0.1136)	0.066911 (0.0676) *	0.032302 (0.3570)
	Loan to Value (L)	-0.868311 (0.0825) *	-0.972414 (0.0478) **	-0.071470 (0.4955)	-0.103622 (0.3197)
	Dividend Yield (D)	-0.037910 (0.0104) **	-0.036829 (0.0109) **	-0.021383 (0.0000) ***	-0.021306 (0.0000) ***
	Return On Equity (ROE)	0.032985 (0.0000) ***	0.033610 (0.0000) ***	0.001862 (0.0131) **	0.002083 (0.0000) ***
	Return Volatility (V)	N.A.	N.A.	0.569936 (0.0000) ***	0.514772 (0.0000) ***
	Growth in Revenue (REV)	0.076941 (0.2623)	0.072237 (0.2913)	0.019121 (0.1816)	0.017077 (0.2340)
	REIT (REIT)	-0.143507 (0.4947)	0.079905 (0.6605)	0.048880 (0.2650)	0.118537 (0.0023) ***
	Investment Focus (I)	0.103187 (0.6268)	0.050543 (0.8105)	-0.017168 (0.6985)	-0.031708 (0.4748)
Sector Variables (Base = Diversified)	Residential	-0.677459 (0.0071) ***	-0.600215 (0.0157) **	-0.186082 (0.0004) ***	-0.157429 (0.0025)***
	Retail	0.094369 (0.5618)	0.101672 (0.5324)	-0.060746 (0.0736) *	-0.058656 (0.0859) *
Industrial/	Industrial	0.184271 (0.5460)	0.130583 (0.4358)	-0.048031 (0.4509)	-0.042655 (0.2281)
Industrial/	Office	0.201598 (0.2778)		-0.017167 (0.6581)	
Industrial/	Industrial/Office	NA		NA	
Speciality	Lodging/Resorts	NA	0.525893 (0.0498) **	NA	-0.034130 (0.5446)
Speciality	Health care	1.071103 (0.0037) ***		0.142878 (0.0650) *	
Speciality	Self storage	-0.109516 (0.8471)		-0.187113 (0.1149)	
Speciality	Speciality	0.140134 (0.7155)		-0.193393 (0.0201) **	
	Risk free (r.f.)	73.90278 (0.0000)***	74.77414 (0.0000)***	10.92339 (0.0000)***	11.21618 (0.0000)***
	Included Obs.	662	662	662	662
	R^2	0.719029	0.716934	0.525006	0.516668
	Adjusted R^2	0.708443	0.707646	0.506335	0.500027
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (D) - All countries at the aggregate level, 2012-2017

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	Model 13	Model 14	Model 15	Model 16
	C	2.181113 (0.0862) *	1.840647 (0.1453)	0.415541 (0.0085) ***	0.423376 (0.0065) ***
Time Variables	Year 2013	1.146196 (0.0000) ***	1.158144 (0.0000) ***	0.140990 (0.0000) ***	0.141519 (0.0000)***
	Year 2014	1.704861 (0.0000) ***	1.739150 (0.0000) ***	0.115658 (0.0000) ***	0.117444 (0.0000) ***
	Year 2015	1.818885 (0.0000) ***	1.887410 (0.0000) ***	0.065474 (0.0037) ***	0.067889 (0.0027) ***
	Year 2016	0.388257 (0.0717) *	0.480033 (0.0267) **	-0.152272 (0.0000) ***	-0.147454 (0.0000) ***
	Year 2017	0.057415 (0.7799)	0.141743 (0.4919)	-0.084819 (0.0010) ***	-0.079029 (0.0020) ***
Country Variables	France	0.040718 (0.8327)	-0.113857 (0.5518)	-0.003289 (0.8910)	-0.012512 (0.5975)
	Germany	0.718535 (0.0002) ***	0.549420 (0.0032) ***	-0.039442 (0.0914) *	-0.051774 (0.0227) **
	The Netherlands	-0.120149 (0.6351)	-0.293917 (0.2453)	-0.026803 (0.3908)	-0.035339 (0.2541)
	Sweden	0.783351 (0.0002) ***	0.592999 (0.0031) ***	-0.024692 (0.3394)	-0.040209 (0.1042)
	Switzerland	1.014453 (0.0006) ***	0.802100 (0.0059) ***	-0.096943 (0.0096) ***	-0.116540 (0.0014) ***
Company-specific Variables	Market Capitalisation (Cap)	-0.209640 (0.1157)	-0.209926 (0.1133)	-0.021704 (0.1861)	-0.024305 (0.1333)
	Loan to Value (L)	-1.635346 (0.0003) ***	-1.079115 (0.0136) **	-0.010811 (0.8479)	0.007830 (0.8842)
	Dividend Yield (D)	-0.145835 (0.0000) ***	-0.132240 (0.0000) ***	-0.018810 (0.0000) ***	-0.017967 (0.0000) ***
	Return On Equity (ROE)	0.060172 (0.0000) ***	0.059446 (0.0000) ***	0.004429 (0.0000) ***	0.004611 (0.0000) ***
	Return Volatility (V)	N.A.	N.A.	0.351447 (0.0008) ***	0.369949 (0.0003) ***
	Growth in Revenue (REV)	-0.014342 (0.8893)	0.010122 (0.9223)	0.029150 (0.0219) **	0.027705 (0.0291) **
	REIT (REIT)	0.594881 (0.0000) ***	0.628123 (0.0000) ***	0.018350 (0.3117)	0.018129 (0.3187)
	Investment Focus (I)	0.079064 (0.5911)	0.166806 (0.2498)	-0.000854 (0.9624)	0.006717 (0.7043)
Sector Variable	Residential	0.030177 (0.8670)	0.071365 (0.6945)	0.037292 (0.0939) *	0.038432 (0.0840) *
	Retail	-0.612497	-0.613056	-0.044350	-0.045708

			(0.0000) ***	(0.0000)***	(0.0147) **	(0.0118) **
	Industrial/	Industrial	0.620607 (0.0023) ***	0.120807 (0.3385)	0.052530 (0.0359)	0.011418 (0.4589)
		Office	-0.124645 (0.3984)		-0.012760 (0.4832)	
		Industrial/Office	0.428556 (0.4226)		0.088161 (0.1808)	
	Speciality	Lodging/Resorts	-0.274794 (0.7645)	0.261367 (0.1886)	-0.003738 (0.9736)	0.049211 (0.0428) **
		Health care	1.102228 (0.0001) ***		0.032144 (0.3514)	
		Self storage	-0.270728 (0.3077)		0.089452 (0.0066) ***	
		Speciality	NA		NA	
	Risk free (r.f.)		15.78916 (0.2792)	16.58724 (0.2607)	-8.465522 (0.0000) ***	-8.545687 (0.0000) ***
	Included Obs.		954	954	954	954
	R^2		0.485839	0.472184	0.364414	0.358539
	Adjusted R^2		0.471418	0.459712	0.345882	0.342675
	Prob (F Stat)		0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (E) U.K. at the aggregate level, 2007-2017

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	Model 17	Model 18	Model 19	Model 20
	C	-2.771301 (0.0483) **	-2.496563 (0.0695) *	-0.629656 (0.0096) ***	-0.536204 (0.0245) **
Time Variables (Base = Year 2007)	Year 2008	-1.506339 (0.0000) ***	-1.573522 (0.0000) ***	0.047975 (0.3495)	0.045563 (0.3750)
	Year 2009	0.145282 (0.6940)	0.091224 (0.8053)	0.444522 (0.0000) ***	0.444673 (0.0000) ***
	Year 2010	1.344976 (0.0005) ***	1.311440 (0.0007) ***	0.330956 (0.0000) ***	0.345856 (0.0000) ***
	Year 2011	1.865442 (0.0000) ***	1.834067 (0.0000) ***	0.410671 (0.0000) ***	0.415901 (0.0000) ***
	Year 2012	2.260472 (0.0000) ***	2.238838 (0.0000) ***	0.556136 (0.0000) ***	0.567529 (0.0000) ***
	Year 2013	3.472005 (0.0000)***	3.454431 (0.0000) ***	0.681360 (0.0000) ***	0.692838 (0.0000) ***
	Year 2014	4.228007 (0.0000) ***	4.221838 (0.0000) ***	0.595483 (0.0000) ***	0.606846 (0.0000) ***
	Year 2015	4.205241 (0.0000) ***	4.235377 (0.0000) ***	0.594849 (0.0000) ***	0.606351 (0.0000) ***
	Year 2016	3.171263 (0.0000) ***	3.219744 (0.0000) ***	0.455618 (0.0000) ***	0.471803 (0.0000) ***
	Year 2017	2.521659	2.557399	0.590309	0.602255

			(0.0000)***	(0.0000) ***	(0.0000) ***	(0.0000) ***
Company-specific Variables	Market Capitalisation (Cap)		-0.102922 (0.4625)	-0.153981 (0.2583)	-0.009757 (0.6871)	-0.020880 (0.3766)
	Loan to Value (L)		-1.938554 (0.0000) ***	-1.631273 (0.0000) ***	-0.016387 (0.8182)	-0.033581 (0.6221)
	Dividend Yield (D)		-0.009793 (0.6216)	-0.001901 (0.9204)	-0.014090 (0.0000) ***	-0.011517 (0.0005) ***
	Return On Equity (ROE)		0.051405 (0.0000) ***	0.051764 (0.0000) ***	0.006230 (0.0000) ***	0.006425 (0.0000) ***
	Return Volatility (V)		N.A.	N.A.	0.520049 (0.0000)***	0.464055 (0.0000)***
	Growth in Revenue (REV)		0.113967 (0.1462)	0.137839 (0.0772) *	0.041025 (0.0026) ***	0.038987 (0.0040) ***
	REIT (REIT)		0.368133 (0.0108) **	0.412707 (0.0022) ***	0.050423 (0.0453) **	0.068073 (0.0048) ***
	Investment Focus (I)		0.268446 (0.1285)	0.268844 (0.1225)	0.041470 (0.1760)	0.028771 (0.3442)
Sector Variables (Base = Diversified)	Residential		0.377834 (0.0634) *	0.367510 (0.0703) *	0.010601 (0.7650)	0.023518 (0.5047)
	Retail		-0.387185 (0.0071) ***	-0.373665 (0.0095) ***	-0.059625 (0.0166) **	-0.055051 (0.0272) **
	Industrial/	Industrial	0.453848 (0.0098) ***	0.231504 (0.0827) *	0.001519 (0.9601)	-0.021855 (0.3457)
		Office	0.032542 (0.8522)		-0.045657 (0.1315)	
		Industrial/Office	0.454672 (0.4077)		0.085056 (0.3705)	
	Speciality	Lodging/Resorts	NA	0.373800 (0.0361) **	NA	-0.014370 (0.6435)
		Health care	0.767248 (0.0015) ***		0.027964 (0.5025)	
		Self storage	-0.018557 (0.9400)		0.015468 (0.7176)	
		Speciality	0.471330 (0.1918)		-0.185658 (0.0050) ***	
	Risk free (r.f.)		90.31352 (0.0000) ***	91.35498 (0.0000) ***	8.657696 (0.0013) ***	9.746479 (0.0003) ***
	Included Obs.		804	804	804	804
	R^2		0.724978	0.721397	0.533363	0.518327
	Adjusted R^2		0.715776	0.713549	0.517127	0.504124
	Prob (F Stat)		0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (F) – U.K. at the aggregate level, 2007-2011

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	Model 21	Model 22	Model 23	Model 24
	C	-3.986904 (0.0588)*	-3.308452 (0.0925) *	-1.068398 (0.0202) **	-0.683354 (0.1145)
Time Variables (Base = Year 2007)	Year 2008	-1.713010 (0.0000) ***	-1.716506 (0.0000) ***	0.032012 (0.6517)	0.027327 (0.7007)
	Year 2009	-0.240782 (0.5515)	-0.238463 (0.5536)	0.412836 (0.0000) ***	0.417198 (0.0000) ***
	Year 2010	0.864343 (0.0467) **	0.848641 (0.0495) **	0.325115 (0.0011) ***	0.332084 (0.0008) ***
	Year 2011	1.316799 (0.0083) ***	1.302451 (0.0086) ***	0.401879 (0.0002) ***	0.394964 (0.0003) ***
Company-specific Variables	Market Capitalisation (Cap)	0.108113 (0.6533)	0.029853 (0.8941)	0.044215 (0.3992)	-0.000975 (0.9842)
	Loan to Value (L)	-1.011842 (0.1854)	-1.105770 (0.1331)	-0.035619 (0.8302)	-0.076762 (0.6349)
	Dividend Yield (D)	0.014649 (0.5320)	0.015527 (0.4830)	-0.014595 (0.0045) ***	-0.013780 (0.0050) ***
	Return On Equity (ROE)	0.052871 (0.0000) ***	0.053374 (0.0000) ***	0.005603 (0.0000) ***	0.005913 (0.0000) ***
	Return Volatility (V)	N.A.	N.A.	0.521722 (0.0000) ***	0.471198 (0.0000) ***
	Growth in Revenue (REV)	0.200983 (0.0555) *	0.193626 (0.0611) *	0.053078 (0.0205) **	0.050586 (0.0265) **
	REIT (REIT)	-0.065982 (0.8078)	0.080348 (0.7116)	0.014985 (0.8003)	0.097410 (0.0503) *
	Investment Focus (I)	0.387370 (0.1839)	0.335388 (0.2333)	0.094833 (0.1385)	0.067531 (0.2832)
Sector Variables (Base = Diversified)	Residential	0.606383 (0.1122)	0.679984 (0.0663) *	-0.077317 (0.3597)	-0.026153 (0.7486)
	Retail	0.339502 (0.1437)	0.332343 (0.1505)	-0.036832 (0.4658)	-0.041079 (0.4180)
Industrial/	Industrial	0.321619 (0.3193)	0.356455 (0.0935) *	-0.045439 (0.5192)	-0.041613 (0.3760)
Industrial/	Office	0.434421 (0.0857) *		-0.007739 (0.8881)	
Industrial/	Industrial/Office	NA		NA	
Speciality	Lodging/Resorts	NA	0.530682 (0.1057)	NA	-0.062210 (0.3920)
Speciality	Health care	0.784568 (0.0736) *		0.092797 (0.3310)	
Speciality	Self storage	0.321191 (0.5894)		-0.207106 (0.1116)	
Speciality	Speciality	0.329037 (0.4693)		-0.194486 (0.0617) *	
	Risk free (r.f.)	65.26742	66.05557	7.238554	7.834594

		(0.0004) ***	(0.0003) ***	(0.0699) *	(0.0506) *
	Included Obs.	338	338	338	338
	R^2	0.735282	0.734571	0.493791	0.483633
	Adjusted R^2	0.719466	0.721340	0.461854	0.456201
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (G) – U.K. at the aggregate level, 2012-2017

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	Model 25	Model 26	Model 27	Model 28
	C	0.482309 (0.7982)	0.093006 (0.9606)	0.147103 (0.5519)	0.170003 (0.4837)
Time Variables	Year 2013	0.668856 (0.0060) ***	0.752904 (0.0025) ***	0.098322 (0.0020) ***	0.103988 (0.0011) ***
	Year 2014	1.322980 (0.0000) ***	1.491025 (0.0000) ***	0.025185 (0.4389)	0.035994 (0.2675)
	Year 2015	1.556121 (0.0000) ***	1.791261 (0.0000) ***	0.056064 (0.0856) *	0.071171 (0.0283) **
	Year 2016	1.252387 (0.0000) ***	1.425613 (0.0000) ***	-0.055607 (0.1642)	-0.041863 (0.2955)
	Year 2017	0.614234 (0.0281) **	0.723216 (0.0111) **	0.079855 (0.0313) **	0.091569 (0.0139) **
Company-specific Variables	Market Capitalisation (Cap)	-0.348047 (0.0799) *	-0.347302 (0.0085)***	-0.049693 (0.0537) *	-0.055015 (0.0301) **
	Loan to Value (L)	-2.569841 (0.0000) ***	-1.991828 (0.0005) ***	-0.075570 (0.3091)	-0.051203 (0.4797)
	Dividend Yield (D)	-0.065412 (0.1521)	-0.019340 (0.6656)	-0.011806 (0.0521) *	-0.006651 (0.2574)
	Return On Equity (ROE)	0.079107 (0.0000) ***	0.071474 (0.0000) ***	0.007005 (0.0000) ***	0.006933 (0.0000) ***
	Return Volatility (V)	N.A.	N.A.	0.822266 (0.0000)***	0.832824 (0.0000)***
	Growth in Revenue (REV)	-0.075247 (0.5637)	-0.011657 (0.9300)	0.025609 (0.1304)	0.026122 (0.1233)
	REIT (REIT)	0.671136 (0.0003) ***	0.623997 (0.0008) ***	0.043266 (0.0733) *	0.034891 (0.1475)
	Investment Focus (I)	0.358806 (0.1531)	0.392180 (0.1269)	0.049293 (0.1335)	0.051346 (0.1203)
Sector Variables (Base = Diversified)	Residential	0.217376 (0.3638)	0.224697 (0.3593)	0.045799 (0.1401)	0.045200 (0.1485)
	Retail	-0.780354 (0.0000) ***	-0.788932 (0.0000) ***	-0.059398 (0.0149) **	-0.055240 (0.0238) **
	Industrial/ Industrial	0.445208 (0.0292) **	0.108354 (0.5263)	0.030334 (0.2521)	-0.004333 (0.8430)
	Industrial/ Office	-0.466074 (0.0657) *		-0.081282 (0.0136) **	

		Industrial/Office	0.286179 (0.5817)		0.083061 (0.2176)	
	Speciality	Lodging/Resorts	N.A.	0.134480 (0.5462)	N.A.	0.028726 (0.3126)
		Health care	0.955409 (0.0009) ***		0.032977 (0.3796)	
		Self storage	-0.487934 (0.0715) *		0.040660 (0.2566)	
		Speciality	NA		NA	
	Risk free (r.f.)		173.2834 (0.0000) ***	172.6308 (0.0000) ***	14.73733 (0.0005) ***	14.32901 (0.0007) ***
	Included Obs.		466	466	466	466
	R^2		0.603686	0.581398	0.471130	0.458797
	Adjusted R^2		0.585874	0.565514	0.446116	0.437004
	Prob (F Stat)		0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (H) – Continental European countries at the aggregate level, 2007-2017

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	Model 29	Model 30	Model 31	Model 32
	C	-0.106141 (0.9436)	-0.106141 (0.9436)	-0.480955 (0.0370) **	-0.480955 (0.0370) **
Time Variables (Base = Year 2007)	Year 2008	-2.258685 (0.0000) ***	-2.258685 (0.0000) ***	-0.242029 (0.0000) ***	-0.242029 (0.0000) ***
	Year 2009	-2.021615 (0.0000) ***	-2.021615 (0.0000) ***	0.015614 (0.7245)	0.015614 (0.7245)
	Year 2010	0.647019 (0.0234) **	0.647019 (0.0234) **	0.355421 (0.0000) ***	0.355421 (0.0000) ***
	Year 2011	1.215852 (0.0000) ***	1.215852 (0.0000) ***	0.135355 (0.0030) ***	0.135355 (0.0030) ***
	Year 2012	-0.594276 (0.0997) *	-0.594276 (0.0997) *	0.118459 (0.0327) **	0.118459 (0.0327) **
	Year 2013	0.453172 (0.1913)	0.453172 (0.1913)	0.184117 (0.0005) ***	0.184117 (0.0005) ***
	Year 2014	0.915448 (0.0220) **	0.915448 (0.0220) **	0.292591 (0.0000) ***	0.292591 (0.0000) ***
	Year 2015	1.369426 (0.0025) ***	1.369426 (0.0025) ***	0.318836 (0.0000) ***	0.318836 (0.0000) ***
	Year 2016	-0.082347 (0.8614)	-0.082347 (0.8614)	0.175832 (0.0157) **	0.175832 (0.0157) **
	Year 2017	-0.201573 (0.6614)	-0.201573 (0.6614)	0.142083 (0.0444) **	0.142083 (0.0444) **
Company-specific	Market Capitalisation (Cap)	0.159278 (0.2741)	0.159278 (0.2741)	0.047842 (0.0333) **	0.047842 (0.0333) **
	Loan to Value (L)	-0.486229 (0.3650)	-0.486229 (0.3650)	-0.016887 (0.8403)	-0.016887 (0.8403)

	Dividend Yield (D)	-0.112987 (0.0000) ***	-0.112987 (0.0000) ***	-0.023373 (0.0000) ***	-0.023373 (0.0000) ***
	Return On Equity (ROE)	0.042219 (0.0000) ***	0.042219 (0.0000) ***	0.001866 (0.0281) **	0.001866 (0.0281) **
	Return Volatility (V)	N.A.	N.A.	0.536935 (0.0000)***	0.536935 (0.0000)***
	Growth in Revenue (REV)	0.024468 (0.7529)	0.024468 (0.7529)	0.000439 (0.9707)	0.000439 (0.9707)
	REIT (REIT)	-0.189822 (0.1375)	-0.189822 (0.1375)	-0.004046 (0.8367)	-0.004046 (0.8367)
	Investment Focus (I)	-0.125364 (0.3731)	-0.125364 (0.3731)	-0.050260 (0.0198) **	-0.050260 (0.0198) **
Sector Variables (Base = Diversified)	Residential	-0.490975 (0.0037) ***	-0.490975 (0.0037) ***	-0.049961 (0.0559) *	-0.049961 (0.0559) *
	Retail	-0.134068 (0.3283)	-0.134068 (0.3283)	-0.020650 (0.3255)	-0.020650 (0.3255)
	Industrial/ Industrial	N.A.	0.151697 (0.2558)	N.A.	0.005990 (0.7693)
	Industrial/ Office	0.151697 (0.2558)		0.005990 (0.7693)	
	Industrial/ Industrial/Office	N.A.		N.A.	
	Speciality Lodging/Resorts	-0.641405 (0.4785)	-0.641405 (0.4785)	-0.040131 (0.7720)	-0.040131 (0.7720)
	Speciality Health care	N.A.		N.A.	
	Speciality Self storage	N.A.		N.A.	
	Speciality Speciality	N.A.		N.A.	
	Risk free (r.f.)	3.806280 (0.7246)	3.806280 (0.7246)	3.202213 (0.0555) *	3.202213 (0.0555) *
	Included Obs.	812	812	812	812
	R^2	0.596251	0.596251	0.528210	0.528210
	Adjusted R^2	0.584993	0.584993	0.514440	0.514440
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (I) – Continental European countries at the aggregate level, 2007-2011

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R')	
	Independent Variables	Model 33	Model 34	Model 35	Model 36
	C	-6.666748 (0.0064) ***	-6.666748 (0.0064) ***	-1.735898 (0.0005) ***	-1.735898 (0.0005) ***
Time Variables(Base = Year 2007)	Year 2008	-2.196845 (0.0000) ***	-2.196845 (0.0000) ***	-0.204796 (0.0001) ***	-0.204796 (0.0001) ***
	Year 2009	-1.986248 (0.0000) ***	-1.986248 (0.0000) ***	0.062912 (0.2952)	0.062912 (0.2952)
	Year 2010	1.017151 (0.0009) ***	1.017151 (0.0009) ***	0.459847 (0.0000) ***	0.459847 (0.0000) ***

	Year 2011	1.665805 (0.0000) ***	1.665805 (0.0000) ***	0.294229 (0.0000) ***	0.294229 (0.0000) ***
Company-specific Variables	Market Capitalisation (Cap)	0.767221 (0.0023) ***	0.767221 (0.0023) ***	0.161678 (0.0017) ***	0.161678 (0.0017) ***
	Loan to Value (L)	-0.271712 (0.7044)	-0.271712 (0.7044)	-0.121667 (0.4063)	-0.121667 (0.4063)
	Dividend Yield (D)	-0.060333 (0.0008) ***	-0.060333 (0.0008) ***	-0.021479 (0.0000) ***	-0.021479 (0.0000) ***
	Return On Equity (ROE)	0.028110 (0.0003) ***	0.028110 (0.0003) ***	-0.001734 (0.2551)	-0.001734 (0.2551)
	Return Volatility (V)	N.A.	N.A.	0.658596 (0.0000)***	0.658596 (0.0000)***
	Growth in Revenue (REV)	-0.035729 (0.6692)	-0.035729 (0.6692)	-0.008583 (0.6098)	-0.008583 (0.6098)
	REIT (REIT)	-0.598224 (0.0008) ***	-0.598224 (0.0008) ***	-0.110750 (0.0022) ***	-0.110750 (0.0022) ***
	Investment Focus (I)	-0.421472 (0.0949) *	-0.421472 (0.0949) *	-0.168898 (0.0009) ***	-0.168898 (0.0009) ***
Sector Variables (Base = Diversified)	Residential	-1.453387 (0.0000) ***	-1.453387 (0.0000) ***	-0.249621 (0.0000) ***	-0.249621 (0.0000) ***
	Retail	0.245961 (0.1908)	0.245961 (0.1908)	-0.017200 (0.6473)	-0.017200 (0.6473)
	Industrial/ Industrial	NA	0.266314 (0.1953)	NA	0.041934 (0.3068)
	Industrial/ Office	0.266314 (0.1953)		0.041934 (0.3068)	
	Industrial/ Industrial/Office	NA		NA	
	Speciality Lodging/Resorts	NA	NA	NA	NA
	Speciality Health care	NA		NA	
	Speciality Self storage	NA		NA	
	Speciality Speciality	NA		NA	
	Risk free (r.f.)	33.73728 (0.0219) **	33.73728 (0.0219) **	14.52139 (0.0000) ***	14.52139 (0.0000) ***
	Included Obs.	324	324	324	324
	R^2	0.747588	0.747588	0.636753	0.636753
	Adjusted R^2	0.735295	0.735295	0.617822	0.617822
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (J) – Continental European countries at the aggregate level, 2012-2017

	Dependent Variable	Risk-adjusted Return (R)		Raw Return (R′)	
	Independent Variables	Model 37	Model 38	Model 39	Model 40
	C	3.589018 (0.0718) *	3.589018 (0.0718) *	0.162356 (0.4718)	0.162356 (0.4718)
Time Variables (Base = Year 2012)	Year 2013	1.024259 (0.0000) ***	1.024259 (0.0000) ***	0.059824 (0.0085) ***	0.059824 (0.0085) ***
	Year 2014	1.321386 (0.0000) ***	1.321386 (0.0000) ***	0.115117 (0.0000) ***	0.115117 (0.0000) ***
	Year 2015	1.780751 (0.0000) ***	1.780751 (0.0000) ***	0.129338 (0.0000) ***	0.129338 (0.0000) ***
	Year 2016	0.350259 (0.2338)	0.350259 (0.2338)	-0.012872 (0.7009)	-0.012872 (0.7009)
	Year 2017	0.287014 (0.3215)	0.287014 (0.3215)	-0.059494 (0.0679)	-0.059494 (0.0679)
Company-specific Variables	Market Capitalisation (Cap)	-0.250609 (0.1983)	-0.250609 (0.1983)	-0.005051 (0.8187)	-0.005051 (0.8187)
	Loan to Value (L)	-0.611492 (0.4357)	-0.611492 (0.4357)	0.070570 (0.4275)	0.070570 (0.4275)
	Dividend Yield (D)	-0.199235 (0.0000) ***	-0.199235 (0.0000) ***	-0.021517 (0.0000) ***	-0.021517 (0.0000) ***
	Return On Equity (ROE)	0.036054 (0.0001) ***	0.036054 (0.0001) ***	0.002806 (0.0053) ***	0.002806 (0.0053) ***
	Return Volatility (V)	N.A.	N.A.	-0.023383 (0.8681)	-0.023383 (0.8681)
	Growth in Revenue (REV)	0.086421 (0.5919)	0.086421 (0.5919)	0.017870 (0.3243)	0.017870 (0.3243)
	REIT (REIT)	0.025754 (0.8943)	0.025754 (0.8943)	0.033046 (0.1297)	0.033046 (0.1297)
	Investment Focus (I)	-0.053756 (0.7524)	-0.053756 (0.7524)	0.001687 (0.9299)	0.001687 (0.9299)
Sector Variables (Base = Diversified)	Residential	0.035553 (0.8692)	0.035553 (0.8692)	0.072885 (0.0044) ***	0.072885 (0.0044) ***
	Retail	-0.382877 (0.0547) *	-0.382877 (0.0547) *	-0.027427 (0.2205)	-0.027427 (0.2205)
Industrial/	Industrial	NA	0.141448 (0.4104)	NA	-0.015487 (0.4227)
Industrial/	Office	0.141448 (0.4104)		-0.015487 (0.4227)	
Industrial/	Industrial/Office	NA		NA	
Speciality	Lodging/Resorts	-0.515615 (0.5676)	-0.515615 (0.5676)	0.044602 (0.6601)	0.044602 (0.6601)
Speciality	Health care	NA		NA	
Speciality	Self storage	NA		NA	
Speciality	Speciality	NA		NA	
	Risk free (r.f.)	-4.754804	-4.754804	-2.750857	-2.750857

		(0.7608)	(0.7608)	(0.1312)	(0.1312)
	Included Obs.	488	488	488	488
	R^2	0.415873	0.415873	0.383302	0.383302
	Adjusted R^2	0.394745	0.394745	0.359633	0.359633
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (K) – All countries at the subsector level, 2007-2017 (with risk-adjusted return as dependent variable)

	Dep. Var.	**Risk adjusted Return (R)**								
	Indep. Variables	Model 41	Model 42	Model 43	Model 44	Model 45	Model 46	Model 47	Model 48	Model 49
		Diversified	Resid.	Indust./ Office	Retail	Speciality	REIT	Non-REIT	Rental	Non-Rental
	C	1.594182 (0.2227)	-19.14795 (0.0016) ***	-13.88755 (0.0004) ***	-3.464666 (0.2144)	-18.90108 (0.0157) **	-0.978748 (0.4630)	-19.32314 (0.0000) ***	-3.755214 (0.0006) ***	-21.46211 (0.0000) ***
Time Variables[2] (Base=Year 2007-Year 2009)	**Year 2010**	3.053893 (0.0000) ***	2.599475 (0.0006) ***	2.802906 (0.0000) ***	2.503902 (0.0000) ***	1.949458 (0.0012) ***	2.530073 (0.0000) ***	2.932814 (0.0000) ***	2.874286 (0.0000) ***	2.028739 (0.0000) ***
	Year 2011									
	Year 2012									
	Year 2013									
	Year 2014	4.621700 (0.0000) ***	3.214456 (0.0031) ***	3.891408 (0.0000) ***	3.015804 (0.0000) ***	2.301636 (0.0072) ***	3.967089 (0.0000) ***	3.640434 (0.0000) ***	4.135683 (0.0000) ***	2.785385 (0.0000) ***
	Year 2015									
	Year 2016									
	Year 2017									
Country Variables	**France**	0.034881 (0.8622)	NA	-0.389569 (0.6783)	0.202605 (0.5799)	NA	-0.004633 (0.9799)	NA	-0.089380 (0.6173)	NA
	Germany	1.060763 (0.0000) ***	1.338391 (0.0148) **	0.787906 (0.0305) **	2.153987 (0.0000) ***	NA	0.867814 (0.0002) ***	0.464762 (0.0241) **	0.796586 (0.0000) ***	1.232336 (0.0005) ***
	The Netherlands	-0.096790 (0.6961)	NA	NA	0.756968 (0.0026) ***	NA	0.154692 (0.3699)	NA	0.219326 (0.1810)	NA
	Sweden	0.936166 (0.0000) ***	NA	-0.700362 (0.5943)	NA	NA	NA	0.045533 (0.8325)	0.859774 (0.0000) ***	-0.431663 (0.4301)
	Switzerland	2.226228 (0.0000) ***	NA	0.089018 (0.9430)	NA	NA	NA	0.717162 (0.0138) **	1.433296 (0.0000) ***	2.716270 (0.0000) ***
Company-specific Variables	**Market Cap (Cap)**	-0.285724 (0.0364) **	2.003414 (0.0024) ***	1.112015 (0.0044) ***	-0.030022 (0.9229)	1.749984 (0.0385) **	-0.224435 (0.0755) *	1.758580 (0.0000) ***	0.019382 (0.8654)	1.957934 (0.0003) ***
	Loan to Value (L)	-1.605393 (0.0004) ***	-2.641001 (0.2363)	0.649385 (0.6313)	-2.241030 (0.0307) **	-0.605144 (0.5484)	-1.360512 (0.0089) ***	0.109079 (0.8291)	-1.268210 (0.0008) ***	0.059812 (0.9542)
	Dividend Yield (D)	-0.080120 (0.0000) ***	-0.490633 (0.0002) ***	0.010574 (0.7667)	-0.269820 (0.0000) ***	-0.014965 (0.9024)	-0.074654 (0.0003) ***	-0.056297 (0.0021) ***	-0.084045 (0.0000) ***	-0.003896 (0.9488)
	Return On Equity (ROE)	0.047090 (0.0000) ***	0.002087 (0.8628)	0.063042 (0.0000) ***	0.033237 (0.0000) ***	0.052149 (0.0025) ***	0.052589 (0.0000) ***	0.036478 (0.0000) ***	0.047919 (0.0000) ***	0.059006 (0.0000) ***
	Return Volatility (V)	NA	NA	NA	NA	NA	NA	NA	NA	NA

[2] Due to constraints on sample size, only two time dummy variables are used for Model 41 to Model 49. The period of 2007 to 2009 is the base year.

	Growth in Revenue (REV)	0.025017 (0.7985)	0.765303 (0.0127) **	0.236305 (0.3213)	-0.034055 (0.7020)	0.228309 (0.2406)	0.207509 (0.0420) **	-0.004421 (0.9548)	0.128872 (0.0922) *	-0.138315 (0.1779)
	REIT	0.190415 (0.2468)	2.453477 (0.0118) **	-0.900701 (0.4423)	1.332290 (0.0043) ***	1.338740 (0.0025) ***	NA	NA	0.231731 (0.0714) *	0.486806 (0.4399)
	Investment Focus (I)	0.077686 (0.6481)	-0.898162 (0.0609) *	0.425847 (0.3681)	0.672039 (0.1934)	0.985463 (0.3248)	-0.205103 (0.5726)	0.069365 (0.6206)	NA	NA
Sector Variables (Base = Diversified)	**Residential**	NA	NA	NA	NA	NA	0.307680 (0.6369)	-0.850991 (0.0000) ***	-0.283623 (0.1560)	-0.257606 (0.3276)
	Retail	NA	NA	NA	NA	NA	-0.014750(0.9185)	-0.918243 (0.0000) ***	-0.224962 (0.0776) *	-0.201451 (0.6818)
	Industrial / Office	NA	NA	NA	NA	NA	0.350859 (0.0106) **	-0.183169 (0.3549)	0.282518 (0.0160) **	-1.802401 (0.0000) ***
	Speciality	NA	NA	NA	NA	NA	0.625926 (0.0048) ***	-0.568071 (0.0499) **	0.399053 (0.0287) **	-0.239980 (0.8091)
	Risk free (r.f.)	94.41704 (0.0000) ***	73.12003 (0.0147) **	76.78098 (0.0000) ***	75.51258 (0.0000) ***	50.18806 (0.0354) **	76.10999 (0.0000) ***	82.65509 (0.0000) ***	78.30422 (0.0000) ***	104.1146 (0.0000) ***
	Included Obs.	791	130	312	280	100	825	791	1402	214
	R^2	0.555819	0.739224	0.642328	0.555840	0.686885	0.612078	0.549333	0.575627	0.555078
	Adjusted R^2	0.547222	0.714915	0.625468	0.534375	0.651703	0.604397	0.540017	0.570104	0.518942
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (L) – All sample countries at the subsector level, 2007-2017 (with raw return as dependent variable).

	Dep. Var.	**Raw Return (R)**								
	Indep. Variables	Model 50	Model 51	Model 52	Model 53	Model 54	Model 55	Model 56	Model 57	Model 58
		Diversified	Resid.	Indust./ Office	Retail	Speciality	REIT	Non-REIT	Rental	Non-Rental
	C	-0.027968 (0.8902)	-3.465417 (0.0024) ***	-1.156513 (0.0301) **	0.243262 (0.5421)	-0.136834 (0.9460)	-0.003510 (0.9850)	-2.550089 (0.0000) ***	-0.400476 (0.0204) **	-2.253968 (0.0290) **
Time Variables[3] (Base= Year2007- Year 2009)	**Year 2010**	0.308621 (0.0000) ***	0.538924 (0.0003) ***	0.376431 (0.0000) ***	0.248504 (0.0000) ***	0.389534 (0.0227) **	0.298924 (0.0000) ***	0.299926 (0.0000) ***	0.334412 (0.0000) ***	0.106030 (0.2048)
	Year 2011									
	Year 2012									
	Year 2013									
	Year 2014	0.363950 (0.0000) ***	0.662237 (0.0014) ***	0.479957 (0.0000) ***	0.258055 (0.0003) ***	0.389444 (0.0872) *	0.373203 (0.0000) ***	0.289463 (0.0000) ***	0.389667 (0.0000) ***	0.118343 (0.3019)
	Year 2015									
	Year 2016									
	Year 2017									
Country Variables	**France**	0.022419 (0.4722)	NA	-0.006969 (0.9571)	0.053007 (0.3116)	NA	0.010927 (0.6740)	NA	0.024621 (0.3850)	NA
	Germany	0.073830 (0.0262) **	0.011631 (0.9100)	0.025231 (0.6148)	0.279134 (0.0001) ***	NA	0.085074 (0.0081) ***	0.014683 (0.6919)	0.084562 (0.0009) ***	0.134928 (0.0569) *

[3] Due to constraints on sample size, only two time dummy variables are used for Model 50 to Model 58. The period of 2007 to 2009 is the base year.

	The Netherlands	0.038185 (0.3192)	NA	NA	0.138260 (0.0001) ***	NA	0.074654 (0.0021) ***	NA	0.071508 (0.0058) ***	NA
	Sweden	0.109177 (0.0003) ***	NA	-0.141645 (0.4339)	NA	NA	NA	-0.031948 (0.4102)	0.114840 (0.0001) ***	-0.077128 (0.4699)
	Switzerland	0.157268 (0.0030) ***	NA	-0.025374 (0.8823)	NA	NA	NA	-0.056833 (0.2783)	0.104285 (0.0163) **	0.224771 (0.0331) **
Company-specific Variables	Market Cap (Cap)	-0.030989 (0.1430)	0.305618 (0.0136) **	0.059738 (0.2629)	-0.065412 (0.1411)	-0.017402 (0.9367)	-0.028921 (0.1021)	0.251968 (0.0000) ***	0.004548 (0.8010)	0.210947 (0.0494) **
	Loan to Value (L)	-0.111633 (0.1147)	0.350925 (0.4057)	0.578017 (0.0021) ***	-0.129233 (0.3824)	0.009230 (0.9707)	-0.045625 (0.5318)	0.193298 (0.0341) **	-0.067245 (0.2630)	0.357190 (0.0736) *
	Dividend Yield (D)	-0.019229 (0.0000) ***	-0.039524 (0.1007)	-0.024197 (0.0000) ***	-0.058800 (0.0000) ***	-0.064891 (0.0784)	-0.021589 (0.0000) ***	-0.016124 (0.0000) ***	-0.019677 (0.0000) ***	-0.024000 (0.0461) **
	Return On Equity (ROE)	0.001958 (0.0033) ***	-0.004200 (0.0711) *	0.003191 (0.0028) ***	0.003243 (0.0008) ***	0.006762 (0.1210)	0.003318 (0.0000) ***	0.000896 (0.3118)	0.002760 (0.0000) ***	0.005260 (0.0205) **
	Return Volatility (V)	0.618830 (0.0000) ***	0.558039 (0.0006) ***	0.924041 (0.0000) ***	0.672058 (0.0001) ***	0.175865 (0.1137)	0.731350 (0.0000) ***	0.512755 (0.0000) ***	0.472304 (0.0000) ***	0.796355 (0.0000) ***
	Growth in Revenue (REV)	0.021140 (0.1639)	0.062317 (0.2812)	0.038414 (0.2442)	-0.041719 (0.0012) ***	0.341342 (0.0000) ***	0.012257 (0.3920)	0.027665 (0.0492) **	0.035895 (0.0030) ***	-0.023534 (0.2331)
	REIT	0.047034 (0.0650) *	0.122765 (0.5012)	-0.132528 (0.4114)	0.230018 (0.0006) ***	0.319974 (0.0039)	NA	NA	0.050497 (0.0146) **	0.185683 (0.1337)
	Investment Focus (I)	-0.028872 (0.2717)	0.041708 (0.6463)	0.072018 (0.2702)	0.084009 (0.2562)	-0.117850 (0.6398)	-0.044436 (0.3834)	-0.010500 (0.6777)	NA	NA
Sector Variables (Base = Diversified)	Residential	NA	NA	NA	NA	NA	-0.002614 (0.9771)	-0.122982 (0.0002) ***	-0.024145 (0.4442)	-0.069043 (0.1760)
	Retail	NA	NA	NA	NA	NA	-0.025199 (0.2128)	-0.108635 (0.0043) ***	-0.031677 (0.1152)	-0.011525 (0.9038)
	Industrial / Office	NA	NA	NA	NA	NA	-0.004518 (0.8151)	-0.004590 (0.8976)	0.007993 (0.6669)	-0.170445 (0.0383) **
	Speciality	NA	NA	NA	NA	NA	0.071165 (0.0221) **	-0.218338 (0.0001) ***	0.007921 (0.7836)	0.024323 (0.8975)
	Risk free (r.f.)	5.862508 (0.0002) ***	5.495042 (0.3304)	6.072352 (0.0164) ***	4.175263 (0.0445) **	4.406243 (0.4610)	5.007466 (0.0006) ***	4.616918 (0.0080) ***	5.679965 (0.0000) ***	5.747956 (0.1074)
	Included Obs.	791	130	312	280	100	825	791	1402	214
	R^2	0.371000	0.583268	0.549274	0.476195	0.557131	0.465180	0.365533	0.396459	0.369789
	Adjusted R^2	0.357998	0.540527	0.526433	0.448832	0.501772	0.453913	0.351580	0.388162	0.315128
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (M) – All countries at the subsector level, 2007-2011 (with risk-adjusted return as dependent variable)

	Dep. Var.	Risk-adjusted Return (R)								
	Indep.	Model 59	Model 60	Model 61	Model 62	Model	Model 64	Model 65	Model 66	Model 67

	Variables	Diversified	Resid.	Indust./ Office	Retail	Specialty	REIT	Non-REIT	Rental	Non-Rental
	C	-0.795946 (0.6466)	-57.29052 (0.0000) ***	-13.21257 (0.0192) **	-8.473760 (0.0737) *	-51.42125 (0.0004)	-0.621837 (0.7389)	-28.39575 (0.0000) ***	-4.317979 (0.0070) ***	-55.83905 (0.0000) ***
Time Variables	Year 2008	-2.031281 (0.0000) ***	3.412741 (0.0158) **	-1.350247 (0.0251) **	-2.197489 (0.0000) ***	-1.913378 (0.0463) **	-2.165234 (0.0000) ***	-1.739785 (0.0000) ***	-2.257398 (0.0000) ***	-0.488017 (0.5469)
	Year 2009	-0.946962 (0.0048) ***	4.328622 (0.01330) **	-0.640285 (0.3404)	-2.038287 (0.0000) ***	-0.769745 (0.3522)	-1.291775 (0.0002) ***	-0.886072 (0.0128) **	-1.287095 (0.0000) ***	0.223336 (0.8367)
	Year 2010	1.474730 (0.0000) ***	4.990196 (0.0023) ***	1.811203 (0.0146) **	0.798484 (0.1061)	0.601157 (0.4907)	0.916792 (0.0120) **	1.807873 (0.0000) ***	1.354506 (0.0000) ***	1.376590 (0.1543)
	Year 2011	1.938207 (0.0000) ***	4.490867 (0.0150) **	2.983842 (0.0004) ***	1.146858 (0.0382) **	0.432097 (0.6563)	1.613294 (0.0000) ***	2.011794 (0.0000) ***	1.974797 (0.0000) ***	0.548947 (0.5841)
Country Variables	France	-0.121202 (0.6654)	NA	NA	NA	NA	-0.177658 (0.5559)	NA	-0.306913 (0.2918)	NA
	Germany	1.001458 (0.0052) ***	NA	1.713682 (0.0083) ***	NA	NA	0.758494 (0.0845) *	0.372654 (0.2094)	0.436054 (0.0790) *	3.551358 (0.0000) ***
	The Netherlands	0.525241 (0.0410) **	NA	NA	0.620520 (0.0650) *	NA	0.269359 (0.2079)	NA	0.319431 (0.0996) *	NA
	Sweden	1.346277 (0.0000) ***	NA	1.841123 (0.2134)	NA	NA	NA	0.046622 (0.8799)	0.957188 (0.0001) ***	NA
	Switzerland	4.168574 (0.0000) ***	NA	3.573546 (0.0093) ***	NA	NA	NA	1.094621 (0.0352) **	2.850148 (0.0000) ***	-1.283800 (0.1603)
Company-specific Variables	Market Cap (Cap)	-0.203683 (0.2785)	6.942558 (0.0000) ***	0.964981 (0.1274)	0.689594 (0.2173)	6.159212 (0.0010) ***	-0.158237 (0.4436)	2.984872 (0.0000) ***	0.171023 (0.3263)	6.437237 (0.0000) ***
	Loan to Value (L)	-1.144929 (0.0619) *	-15.96243 (0.0026) ***	-3.601501 (0.1009)	-1.230446 (0.2654)	-3.304363 (0.3197)	-0.554115 (0.4431)	-0.473884 (0.4818)	-0.752051 (0.1575)	-3.859736 (0.0500) **
	Dividend Yield (D)	-0.036854 (0.0189) **	-0.132386 (0.3749)	0.027801 (0.4333)	0.003859 (0.9612)	0.195545 (0.1918)	-0.020990 (0.4054)	-0.006111 (0.7329)	-0.036738 (0.0142) **	0.081394 (0.1528)
	Return On Equity (ROE)	0.039833 (0.0000) ***	0.011373 (0.4529)	0.044784 (0.0000) ***	0.018542 (0.0130) **	0.009293 (0.7181)	0.042210 (0.0000) ***	0.018405 (0.0033) ***	0.034597 (0.0000) ***	0.022482 (0.2926)
	Return Volatility (V)	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Growth in Revenue (REV)	-0.041673 (0.6626)	0.490413 (0.2952)	0.226731 (0.4636)	-0.020907 (0.8301)	-0.066170 (0.7742)	0.115830 (0.3822)	0.074198 (0.3219)	0.085970 (0.3136)	-0.036061 (0.7458)
	REIT	0.159392 (0.4965)	NA	0.796838 (0.4840)	-1.237211 (0.0054) ***	1.657929 (0.0117) **	NA	NA	0.017441 (0.9260)	3.257527 (0.0003) ***
	Investment Focus (I)	-0.393540 (0.1196)	1.233185 (0.1003)	0.244762 (0.7591)	1.453728 (0.0415) **	NA	-0.361804 (0.5359)	-0.169945 (0.4478)	NA	NA
Sector Variables	Residential	NA	NA	NA	NA	NA	NA	-0.993894 (0.0001) ***	-0.453886 (0.1007)	-0.330685 (0.5016)
	Retail	NA	NA	NA	NA	NA	0.489813 (0.0116) **	-0.512371 (0.0642) *	0.337796 (0.0573) *	-0.118249 (0.8398)

	Industrial / Office	NA	NA	NA	NA	NA	0.403761 (0.0543) *	-0.697906 (0.0148) *	0.226548 (0.1787)	NA
	Speciality	NA	NA	NA	NA	NA	0.625507 (0.1165)	0.011514 (0.9735)	0.445203 (0.1005)	NA
	Risk free (r.f.)	76.20279 (0.0000) ***	23.12843 (0.6580)	110.6748 (0.0005) ***	66.45717 (0.0081) ***	5.373284 (0.8882)	62.93170(0.0002) ***	69.91190 (0.0000) ***	76.01477 (0.0000) ***	33.51219 (0.2620)
	Included Obs.	315	42	124	137	44	350	312	587	75
	R^2	0.571379	0.895596	0.815667	0.734714	0.847865	0.742639	0.760120	0.734838	0.796747
	Adjusted R^2	0.552867	0.857314	0.790065	0.706676	0.795568	0.729461	0.745383	0.725468	0.745073
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (N) – All sample countries at the subsector level, 2012-2017 (with risk-adjusted return as dependent variable)

	Dep. Var.	Risk-adjusted Return (R)								
	Indep. Variables	Model 68	Model 69	Model 70	Model 71	Model 72	Model 73	Model 74	Model 75	Model 76
		Diversified	Resid.	Indust./ Office	Retail	Speciality	REIT	Non-REIT	Rental	Non-Rental
	C	1.248150 (0.4470)	-2.443997 (0.6427)	-4.967930 (0.3622)	6.996608 (0.0353) **	45.12802 (0.0000) ***	4.461702 (0.0040) ***	-1.133980 (0.7549)	3.559780 (0.0051) ***	-16.46832 (0.0936) *
Time Variables (Base = Year 2012)	Year 2013	1.273164 (0.0000) ***	0.443828 (0.3857)	0.771885 (0.0497) **	1.375023 (0.0000) ***	1.678498 (0.0033) ***	1.267898 (0.0000) ***	0.996744 (0.0000) ***	1.217956 (0.0000) ***	0.954938 (0.0389) **
	Year 2014	2.191837 (0.0000) ***	-0.114560 (0.8325)	1.389165 (0.0004) ***	1.048012 (0.0008) ***	1.684641 (0.0024) ***	1.874899 (0.0000) ***	1.410996 (0.0000) ***	1.796753 (0.0000) ***	1.385233 (0.0029) ***
	Year 2015	2.239723 (0.0000) ***	-0.283933 (0.6535)	2.342444 (0.0000) ***	1.225663 (0.0006) ***	2.413001 (0.0002) ***	2.115046 (0.0000) ***	1.430683 (0.0000) ***	2.051931 (0.0000) ***	0.988247 (0.0778) *
	Year 2016	0.484336 (0.1103)	-1.974478 (0.0173) **	1.174088 (0.0516) *	-0.536157 (0.1907)	1.805454 (0.0129) **	0.585879 (0.0414) **	0.025623 (0.9384)	0.382225 (0.0863) *	0.538706 (0.4392)
	Year 2017	0.424331 (0.1421)	-3.159551 (0.0002) ***	0.967827 (0.1093)	-0.940344 (0.0135) **	1.390223 (0.0633) *	0.078583 (0.7710)	-0.116585 (0.7138)	-0.135900 (0.5226)	0.658264 (0.3378)
Country Variables (Base = U.K.)	France	-0.213881 (0.4027)	NA	0.775590 (0.5165)	-0.136260 (0.6592)	NA	-0.195862 (0.3469)	NA	-0.290828 (0.1403)	NA
	Germany	0.560340 (0.0321) **	1.980694(0.0019) ***	0.086535 (0.8686)	1.524128 (0.0209) **	NA	0.113266(0.6647)	0.730924 (0.0205) **	0.286847(0.1471)	0.846257 (0.2574)
	The Netherlands	-1.765583 (0.0003) ***	NA	NA	0.291959 (0.3692)	NA	-0.281642 (0.2690)	NA	-0.341616 (0.1661)	NA
	Sweden	0.598775 (0.0130) **	NA	NA	NA	NA	NA	0.501901 (0.1087)	0.501690 (0.0188) **	-0.037536 (0.9612)
	Switzerland	1.287238 (0.0014) ***	NA	1.287274 (0.1487)	NA	NA	NA	0.560201 (0.2208)	0.048840 (0.8794)	3.320385 (0.0019) ***
Company-specific Variables	Market Cap (Cap)	-0.136197 (0.4224)	0.584067 (0.3311)	0.207000 (0.7276)	-0.633043 (0.0583) *	-4.696813 (0.0000)***	-0.351718 (0.0148) **	0.173429 (0.6558)	-0.324231 (0.0161) **	1.518482 (0.1512)
	Loan to Value (L)	-1.700856 (0.0060) ***	-7.469732 (0.0005) ***	4.490861 (0.0372) **	-2.180096 (0.2601)	3.206782 (0.0007) ***	-1.080804 (0.1198)	-1.170603 (0.1187)	-1.270651 (0.0057) ***	1.284204 (0.4204)

	Dividend Yield (D)	-0.094328 (0.0010) ***	0.213142 (0.1592)	-0.316164 (0.0297) **	-0.344820 (0.0000) ***	-0.768030 (0.0001) ***	-0.123984 (0.0000) ***	-0.109732 (0.0558) *	-0.143749 (0.0000) ***	-0.098783 (0.5163)
	Return On Equity (ROE)	0.045384 (0.0000) ***	0.135446 (0.0000) ***	0.059599 (0.0014) ***	0.036950 (0.0232) **	0.001954 (0.9252)	0.067696 (0.0000) ***	0.054655 (0.0000) ***	0.052012 (0.0000) ***	0.089829 (0.0000) ***
	Return Volatility (V)	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Growth in Revenue (REV)	-0.054122 (0.7671)	0.020167 (0.9461)	0.583861 (0.1161)	-0.139300 (0.3437)	0.871227 (0.0191) **	0.118522 (0.3370)	-0.278002 (0.1319)	-0.030669 (0.7799)	-0.029309 (0.9180)
	REIT	0.384414 (0.0465) **	2.679254 (0.0032) ***	0.460962 (0.4092)	1.727842 (0.0027) ***	2.767886 (0.0000) ***	NA	NA	0.473775 (0.0011) ***	1.935757 (0.1690)
	Investment Focus (I)	-0.011910 (0.9510)	-1.599966 (0.0011) ***	1.088236 (0.0811)*	NA	-1.640582 (0.0427)**	-0.582455 (0.1490)	0.137288 (0.4292)	NA	NA
Sector Variables (Base = Diversified)	Residential	NA	NA	NA	NA	NA	0.942522 (0.0894)	-0.213724 (0.3799)	0.215753 (0.3612)	0.266025 (0.4478)
	Retail	NA	NA	NA	NA	NA	-0.561146 (0.0018) ***	-0.936998 (0.0010) ***	-0.546827 (0.0002) ***	NA
	Industrial/ Office	NA	NA	NA	NA	NA	0.175362 (0.2528)	0.036874 (0.8767)	0.302117(0.0187) **	-1.756681 (0.0007) ***
	Speciality	NA	NA	NA	NA	NA	0.380375 (0.0976) *	-1.061845 (0.0333) **	0.284671 (0.1568)	-0.177994 (0.8644)
	Risk free (r.f.)	36.47298 (0.0700) *	30.23491 (0.5098)	66.71927 (0.1381)	-26.95551 (0.3156)	-177.4649 (0.0035) ***	5.618059 (0.7735)	14.76651 (0.5162)	5.228219 (0.7287)	86.14401 (0.0671) *
	Included Obs.	476	88	188	146	56	475	479	815	139
	R^2	0.525348	0.609260	0.444165	0.642540	0.799698	0.607983	0.341337	0.524852	0.463516
	Adjusted R^2	0.506652	0.534323	0.392157	0.601294	0.737699	0.591614	0.314072	0.512269	0.383044
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Regression Results (O) – All countries at the subsector level, 2007-2017 (with risk-adjusted return as dependent variable)

	Dep. Var.	Risk adjusted Return (R)								
	Indep. Variables	Model 77	Model 78	Model 79	Model 80	Model 81	Model 82	Model 83	Model 84	Model 85
		Diversified	Resid.	Indust./ Office	Retail	Specialty	REIT	Non-REIT	Rental	Non-Rental
	C	-1.680533 (0.2029)	-15.10952 (0.0088) ***	-13.72595 (0.0004) ***	-1.586618 (0.5631)	-18.91459 (0.0114) **	-0.905307 (0.4932)	-18.38737 (0.0000) ***	-3.430855 (0.0017) ***	-17.16780 (0.0008) ***
Time Variables[4] (Base=Year 2007-Year 2009)	Year 2010	3.079900 (0.0000)***	2.361682 (0.0011) ***	2.796745 (0.0000) ***	2.638759 (0.0000) ***	1.953591 (0.0012) ***	2.476323 (0.0000) ***	2.982386 (0.0000) ***	2.894169 (0.0000) ***	1.997546 (0.0000) ***
	Year 2011									
	Year 2012									
	Year 2013									
	Year 2014	4.640851 (0.0000) ***	3.210328 (0.0019) ***	3.889690 (0.0000) ***	3.163933 (0.0000) ***	2.303206 (0.0072) ***	3.870393 (0.0000) ***	3.739166 (0.0000) ***	4.165521 (0.0000) ***	2.851502 (0.0000) ***
	Year 2015									
	Year 2016									

[4] Due to constraints on sample size, only two time dummy variables are used for Models 77 - 85. The period of 2007 to 2009 is the base year.

	Year 2017									
Country Variables	France	-0.001881 (0.9925)	NA	-0.366465 (0.6966)	0.548339 (0.1360)	NA	0.009793 (0.9573)	NA	-0.097497 (0.5830)	NA
	Germany	1.037374 (0.0000) ***	1.387851 (0.0070) ***	0.776976 (0.0321) **	2.523704 (0.0000) ***	NA	0.869497 (0.0001) ***	0.536475 (0.0092) ***	0.813841 (0.0000) ***	1.818359 (0.0001) ***
	The Netherlands	-0.013581 (0.9574)	NA	NA	0.944821 (0.0001) ***	NA	0.219972 (0.2089)	NA	0.238318 (0.1476)	NA
	Sweden	0.947344 (0.0000) ***	NA	-0.717048 (0.5857)	NA	NA	NA	0.134670 (0.5334)	0.911031	-0.231229 (0.6673)
	Switzerland	2.231751 (0.0000***)	NA	0.082921 (0.9469)	NA	NA	NA	0.844422 (0.0039) ***	1.516812 (0.0000) ***	3.360795 (0.0000) ***
Company-specific Variables	Market Cap (Cap)	-0.275673 (0.0449) **	1.535411 (0.0154) **	1.095328 (0.0045) ***	-0.248600 (0.4172)	1.751642 (0.0310) **	-0.234681 (0.0616) *	1.639879 (0.0000) ***	-0.023384 (0.8376)	1.529915 (0.0031) ***
	Loan to Value (L)	-1.613708 (0.0004) ***	-1.680122 (0.4348)	0.717228 (0.5977)	-2.520242 (0.0130) **	-0.605761 (0.5467)	-1.229877 (0.0186) **	-0.017227 (0.9726)	-1.260306 (0.0008) ***	0.065667 (0.9490)
	Dividend Yield (D)	-0.095281 (0.0000) ***	-0.556971 (0.0000) ***	0.003723 (0.9129)	-0.366132 (0.0000) ***	-0.015975 (0.8934)	-0.095509 (0.0000) ***	-0.059716 (0.0078) ***	-0.093459 (0.0000) ***	-0.265502 (0.0692) *
	Return On Equity (ROE)	0.046361 (0.0000) ***	0.007205 (0.5317)	0.062603 (0.0000) ***	0.031652 (0.0000) ***	0.052095 (0.0025) ***	0.052161 (0.0000) ***	0.036524 (0.0000) ***	0.047631 (0.0000) ***	0.057162 (0.0000) ***
	Return Volatility (V)	NA	NA	NA	NA	NA	NA	NA	NA	NA
	Growth in Revenue (REV)	0.021661 (0.8256)	0.800123 (0.0070) ***	0.232091 (0.3298)	0.031652 (0.0000) ***	0.229226 (0.2379)	0.196918 (0.0532) *	-0.009191 (0.9054)	0.119300 (0.1164)	-0.138059 (0.1748)
	REIT	0.188528 (0.2539)	2.564395 (0.0057) ***	-0.908337 (0.4385)	1.743615 (0.0002) ***	1.343351 (0.0028) ***	NA	NA	0.269910 (0.0354) **	1.745370 (0.0290) **
	Investment Focus (I)	0.126541 (0.4647)	-0.742487 (0.1065)	0.441832 (0.3509)	0.777113 (0.1231)	0.982713 (0.3249)	-0.023964 (0.9471)	0.086289 (0.5365)	NA	NA
Sector Variables (Base = Diversified)	Residential	NA	NA	NA	NA	NA	0.359973 (0.5800)	-0.733989 (0.0001) ***	-0.139749 (-0.139749)	-0.163466 (0.5285)
	Retail	NA	NA	NA	NA	NA	0.342684 (0.0124) **	-0.169422 (0.3881)	0.279336 (0.4827)	-1.705341 (0.0001) ***
	Industrial / Office	NA	NA	NA	NA	NA	-0.012207 (0.9323)	-0.889401 (0.0000) ***	-0.191011 (0.1311)	-0.189856 (0.6961)
	Speciality	NA	NA	NA	NA	NA	0.635040 (0.0041) ***	-0.542594 (0.0592) *	0.398701 (0.0275) **	0.000487 (0.9996)
	Risk free (r.f.)	94.15985 (0.0000) ***	64.46747 (0.0255) **	76.49663 (0.0000) ***	79.54461 (0.0000) ***	50.23981 (0.0328) **	72.99252 (0.0000) ***	85.39270 (0.0000) ***	79.74196 (0.0000) ***	97.02255 (0.0000) ***
	Included	791	130	312	280	100	825	791	1402	214

	Obs.									
	R^2	0.552475	0.726498	0.642236	0.578592	0.686895	0.614074	0.540480	0.574796	0.562481
	Adjusted R^2	0.543802	0.700785	0.625372	0.558226	0.651715	0.606432	0.530956	0.569254	0.526946
	Prob (F Stat)	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000

Note: p-values are in brackets; "*"indicates significance at the 10% level; "**" indicates significance at the 5% level; "***indicates significance at the 1% level.

Technical Annex – Summary composition of model specifications

Model specification, sample period, sample sectors and sample countries for Models 1 – 40 (Aggregate level models)

Model[5]	Sample Country(ies)/ Region[6]	Sample Sector[7]	Sample Period[8]	Dep. Var[9]	Sector Class. Method	Model	Sample Countries	Sample Sector	Sample Period	Dep. Var	Sector Class. Method
1	All	All	2007-2017	R	10-sector	21	U.K.	All	2007-2011	R	10-sector
2	All	All	2007-2017	R	5-sector	22	U.K.	All	2007-2011	R	5-sector
3	All	All	2007-2017	R'	10-sector	23	U.K.	All	2007-2011	R'	10-sector
4	All	All	2007-2017	R'	5-sector	24	U.K.	All	2007-2011	R'	5-sector
5[i]	All	All	2007-2017	R	10-sector	25	U.K.	All	2012-2017	R	10-sector
6	All	All	2007-2017	R	5-sector	26	U.K.	All	2012-2017	R	5-sector
7	All	All	2007-2017	R'	10-sector	27	U.K.	All	2012-2017	R'	10-sector
8	All	All	2007-2017	R'	5-sector	28	U.K.	All	2012-2017	R'	5-sector
9	All	All	2007-2011	R	10-sector	29	Contin. Europe	All	2007-2017	R	10-sector
10	All	All	2007-2011	R	5-sector	30	Contin. Europe	All	2007-2017	R	5-sector
11	All	All	2007-2011	R'	10-sector	31	Contin. Europe	All	2007-2017	R'	10-sector
12	All	All	2007-2011	R'	5-sector	32	Contin. Europe	All	2007-2017	R'	5-sector
13	All	All	2012-2017	R	10-sector	33	Contin. Europe	All	2007-2011	R	10-sector
14	All	All	2012-2017	R	5-sector	34	Contin. Europe	All	2007-2011	R	5-sector
15	All	All	2012-2017	R'	10-sector	35	Contin. Europe	All	2007-2011	R'	10-sector
16	All	All	2012-2017	R'	5-sector	36	Contin. Europe	All	2007-2011	R'	5-sector
17	U.K.	All	2007-2017	R	10-sector	37	Contin. Europe	All	2012-2017	R	10-sector
18	U.K.	All	2007-2017	R	5-sector	38	Contin. Europe	All	2012-2017	R	5-sector
19	U.K.	All	2007-2017	R'	10-sector	39	Contin. Europe	All	2012-2017	R'	10-sector
20	U.K.	All	2007-2017	R'	5-sector	40	Contin. Europe	All	2012-2017	R'	5-sector

[5] Models 1 – 4 and Models 9 – 76 take dividend yield as realised. The remaining models take the attribute as indicated.
[6] "Contin. Europe" refers to the five sample continental European countries, namely France, Germany, the Netherlands, Sweden and Switzerland.
[7] Since some countries/regions do not have data for certain sectors over some period, the corresponding sector dummy(ies) is therefore removed from those models.
[8] "2007-2017" refers to Q1 2007 to Q4 2017; "2007-2011" refers to Q1 2007 to Q4 2011, and "2012-2017" refers to Q1 2012 to Q3 2017.
[9] "R" refers to risk adjusted return whereas "R'" refers to raw return.

Model specification, sample period, sample sectors and sample countries for Models 41 – 85 (Sector level models)

Model	Sample Countries	Sample Sector	Sample Period	Dep. Var	Sector Class. Method	Model	Sample Countries	Sample Sector	Sample Period	Dep. Var	Sector Class. Method
41	All	Diversified	2007-2017	R	5-sector	64	All	REIT	2007-2011	R	5-sector
42	All	Residential	2007-2017	R	5-sector	65	All	Non-REIT	2007-2011	R	5-sector
43	All	Industrial/ Office	2007-2017	R	5-sector	66	All	Rental	2007-2011	R	5-sector
44	All	Retail	2007-2017	R	5-sector	67	All	Non-rental	2007-2011	R	5-sector
45	All	Speciality	2007-2017	R	5-sector	68	All	Diversified	2012-2017	R	5-sector
46	All	REIT	2007-2017	R	5-sector	69	All	Residential	2012-2017	R	5-sector
47	All	Non-REIT	2007-2017	R	5-sector	70	All	Industrial/ Office	2012-2017	R	5-sector
48	All	Rental	2007-2017	R	5-sector	71	All	Retail	2012-2017	R	5-sector
49	All	Non-rental	2007-2017	R	5-sector	72	All	Speciality	2012-2017	R	5-sector
50	All	Diversified	2007-2017	R'	5-sector	73	All	REIT	2012-2017	R	5-sector
51	All	Residential	2007-2017	R'	5-sector	74	All	Non-REIT	2012-2017	R	5-sector
52	All	Industrial/ Office	2007-2017	R'	5-sector	75	All	Rental	2012-2017	R	5-sector
53	All	Retail	2007-2017	R'	5-sector	76	All	Non-rental	2012-2017	R	5-sector
54	All	Speciality	2007-2017	R'	5-sector	77	All	Diversified	2007-2017	R	5-sector
55	All	REIT	2007-2017	R'	5-sector	78	All	Residential	2007-2017	R	5-sector
56	All	Non-REIT	2007-2017	R'	5-sector	79	All	Industrial/ Office	2007-2017	R	5-sector
67	All	Rental	2007-2017	R'	5-sector	80	All	Retail	2007-2017	R	5-sector
58	All	Non-rental	2007-2017	R'	5-sector	81	All	Speciality	2007-2017	R	5-sector
59	All	Diversified	2007-2011	R	5-sector	82	All	REIT	2007-2017	R	5-sector
60	All	Residential	2007-2011	R	5-sector	83	All	Non-REIT	2007-2017	R	5-sector
61	All	Industrial/ Office	2007-2011	R	5-sector	84	All	Rental	2007-2017	R	5-sector
62	All	Retail	2007-2011	R	5-sector	85	All	Non-rental	2007-2017	R	5-sector
63	All	Speciality	2007-2011	R	5-sector						

Summary on model specification, sample period, sample sectors and sample countries for Models 86 – 89 (Diversification models)

Model[10]	Sample Countries	Sample Sector	Sample Period	Diversification Variable used	Dep. Var	Model	Sample Countries	Sample Sector	Sample Period	Diversification Variable used	Dep. Var
86	All	All	2012 - 2016	H.I.	R	88	All	All	2012 - 2016	H.I.	R'
87	All	All	2012 - 2016	S.S.	R	89	All	All	2012 - 2016	S.S.	R'

[10] Due to data limitations, return on equity and growth in revenue are not included in Models 86 – 89.